



# *Association*

SEPTEMBER 1945

VOL. 27 · NO. 9

## Your doodle...



You're no architect. But you know the kind of kitchen you'd like. Efficient to the 'nth degree—but cozy, too. A place for everything . . . and everything scientifically placed to save you time, work.

## our design...

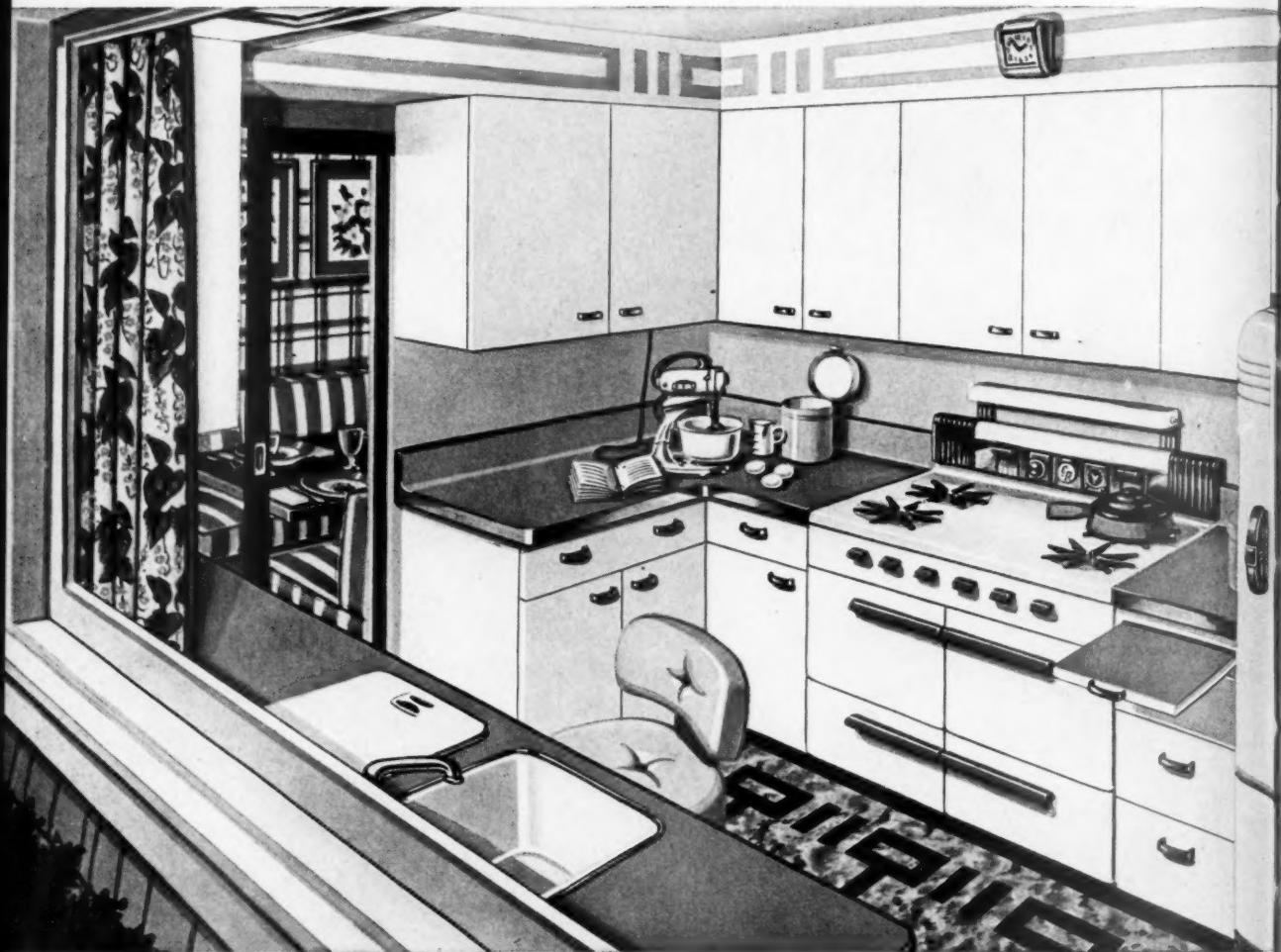


Here's the result of your "wants"—plus years of practical research by the entire Gas industry . . . designs for a whole series of "New Freedom Gas Kitchens."\* They're free from unwanted heat, dirt—even offending cooking odors.

They're free from little open spaces that catch and hold dust and crumbs. They're the step-savapest, work-savapest kitchens you ever saw . . . and one of them is bound to be just right for you!

## and Presto!

# a cooking center with new freedom...more fun!

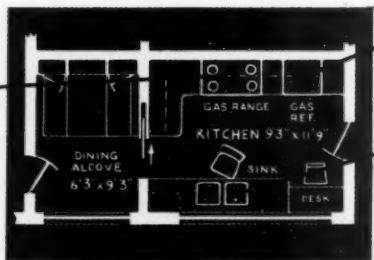


Picture-Window Kitchen . . . ANOTHER "NEW FREEDOM GAS KITCHEN" DESIGN

week in the window and see the "musts" that put each "New Freedom Gas Kitchen" in a class by itself!

### WANT TO BE A BETTER COOK?

Here's where your new clock-controlled Gas range goes . . . the fastest, smartest, most efficient and economical range you ever looked on. No matter what "make" you buy—if it bears the CP seal it's tops in cooking performance!



~~WANT TO SAVE MARKETING TIME?~~ Here's where to do it! In spacious new Gas refrigerator you can store more frozen foods... all foods fresh longer. It always runs silently, efficiently, because there are no moving parts!

~~WANT PLENTY OF HOT WATER?~~ You'll need it here for that automatic dishwasher . . . need it in the laundry for a new do-everything machine. And the easiest, most economical way to get all the hot necessary for every job is with a new automatic Gas water-heater. Better get to work on your "New Freedom Gas Kitchen" today!

# GAS



THE WONDER FLAME  
THAT COOLS AS WELL AS HEATS  
AMERICAN GAS ASSOCIATION



While the **MONTHLY** is not geared for publication as far in advance as the big national magazines nonetheless it had something in common with them last month. Most of the articles herein were prepared before V-Day and at a time when it looked as though the war would last for months. . . . Notwithstanding this fact, it is surprising how little the material has lost its pertinent timeliness. The natural gas investigation covered by Mr. Hargrove is still very much in prospect and doubtless would take an atomic bomb to displace; Mr. Bean's analysis of the housing situation is just as timely, if not more so, now that materials have begun to flow; Mr. Adams' message about the need for industrial merchandising is just as poignant but with a rush label added; we are still very much concerned with the New Freedom Kitchen program, and our technical problems have not changed. . . . Perhaps we are fortunate that our whole issue didn't have to be discarded. Many other industries had to change not only their complexions but their entire constitutions over night. . . . Then, too, the atomic explosion bounced a lot of old ideas out the window. Let's hope the gas industry is ready for the new age!

EDITORIAL OFFICES:  
AMERICAN GAS ASSOCIATION  
420 LEXINGTON AVE., NEW YORK 17, N. Y.



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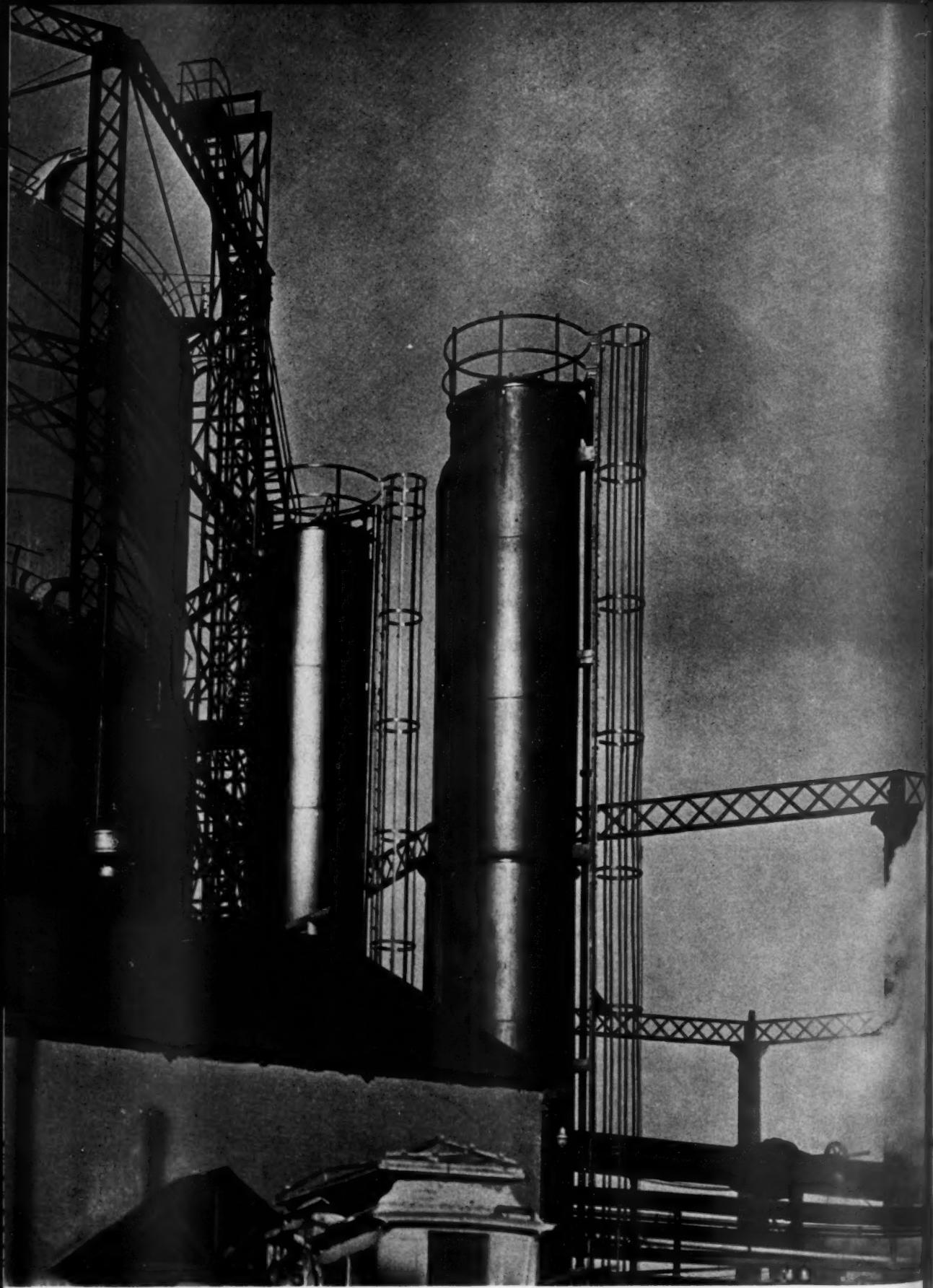
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JAMES M. BEALL, *Editor*

## The Shift from War to Peace

THE WAR'S END found the gas industry making the greatest contribution in its history to the far-flung war industries and at the same time serving more residential and commercial customers than ever before. While our reconversion problems are not as drastic as most other industries, the shift from war to peacetime thinking is just as great. Those industries which can more quickly adjust themselves to this new situation will benefit accordingly. In order to chart a path for peace and at the same time to crystallize the thinking of our industry to a small extent, the MONTHLY queried the Association's officers and directors as to their viewpoints on the gas industry's opportunities at the end of the war. The statements which follow are significant not so much for the information they contain as for the state of mind they reflect at this historic moment.

SINCE THE GAS INDUSTRY, LIKE ALL OTHERS, IS MADE UP OF INDIVIDUALS, OUR PRIMARY FEELING IS ONE OF INTENSE RELIEF AT THE CONCLUSION OF HOSTILITIES, THE END OF CARNAGE AND THE PITFUL WASTE OF HUMAN LIFE AND OF THE ACCUMULATED WEALTH OF THE AGES.

WE ARE ALREADY EXPERIENCING GREATLY ACCELERATED RELEASES FROM THE NECESSARY CONTROLS OF WARTIME AND MAY REASONABLY EXPECT AN EARLY END TO SHORTAGES OF FOOD, CLOTHING, AND THE REST OF LIFE'S ESSENTIALS AND COMFORTS.

THE GAS INDUSTRY, UNLIKE MANY OTHERS, HAS NOT UNDERGONE RADICAL CHANGE. OUR OPERATIONS AND OUR BASIC ECONOMICS ARE UNTOUCHED. THE DISTORTIONS DUE TO WARTIME DEMANDS AND TO THE SHORTAGE OF LABOR AND MATERIALS WILL SOON BE RELIEVED.

WHAT HAS CHANGED IS OUR OPPORTUNITY FOR INCREASED AND IMPROVED SERVICE TO THE AMERICAN PEOPLE. WE HAVE LEARNED IN MANY DIRECTIONS IN MEETING THE DEMANDS OF WAR AGENCIES AND OF CIVILIAN SUPPLY AND HAVE DISCOVERED NEW METHODS AND NEW APPLICATIONS.

GAS APPLIANCES THROUGH WHICH WE SELL OUR PRODUCT WILL SHOW MARKED IF NOT IMMEDIATE IMPROVEMENT. WE MAY RELY UPON OUR APPLIANCE MANUFACTURERS TO PRODUCE AND PROMOTE THE MOST MODERN, THE MOST CONVENIENT AND THE MOST FLEXIBLE HOUSEHOLD, COMMERCIAL AND INDUSTRIAL APPLIANCES THAT OUR COUNTRY HAS EVER SEEN AND USED.

WE SHALL BE IN GREAT DEMAND TO ASSIST IN RELIEF OF THE TREMENDOUS HOUSING SHORTAGE. IT IS OUR GREATEST OPPORTUNITY. WE SHALL MEET IT AND NEED HAVE NO FEARS FOR OUR FUTURE.

*Alexander Forward*

OPPORTUNITIES FOR THE GAS INDUSTRY ARE GREATER, MORE VARIED, AND LARGER IN NUMBER THAN THEY WERE FIVE YEARS AGO. RESEARCH, PROMOTION, ORGANIZATION, AND EFFORT, ARE THE KEYS TO BETTER SERVICE AND MORE BUSINESS—WHICH WILL HAVE TO BE EARNED.

OUR RESEARCH IS ABREAST OF THE TIMES, ALL SET FOR FURTHER PROGRESS.

PROMOTION HAS BEEN GEARED TO RESEARCH; BOTH ARE UNIFIED WITH THE ASSOCIATION'S NEW FUNCTIONAL SETUP.

THROUGH PROPER AND EFFICIENT ORGANIZATION—PRODUCTION, TRANSMISSION, STORAGE, AND DISTRIBUTION HAVE SURPASSED MOST EXPECTATIONS. THE TREND WILL BE FOR MORE AND MORE GAS, AND IT WILL BE AVAILABLE.

EFFORT—THAT IS UP TO US. OUR OPPORTUNITIES ARE LIMITED ONLY BY OURSELVES.

*J. French Robinson*

Opposite: Plant of The Hartford Gas Company which served a large wartime industrial area and will now adjust its sights for peacetime business. Photo by Richard Stevens shows scrubbers, compressor house and company's No. 3 gas holder.

THE WAR'S ENDING WILL UNCOIL A SPRING OF OPPORTUNITY FOR THE GAS INDUSTRY. PENT-UP CONSTRUCTION AND SALES PROMOTION PROGRAMS WILL BE UNLEASHED, BRINGING HIGH LEVELS OF EMPLOYMENT - SO VITAL FOR ECONOMIC RECOVERY AND PROSPERITY.

Demonstrate the stability of our industry and its ability to serve equally in war and in peace. Availability of reliable service will make reconversion to peace time industry easier and quicker. The gas industry has a real opportunity to lead the parade back to peace and progress.

H. Carl Wolf

THE GAS INDUSTRY HAS AN OPPORTUNITY CONFRONTING IT TO PASS FROM THE TASK OF HELPING TO WIN THE WAR TO THAT OF AIDING IN CREATING NEW VALUES TO SERVE IN ADVANCING THE PEACEFUL PURSUITS OF THE NATION. THE GREAT ADVANTAGES OF GAS IN THE WAR WHICH IT IS SO WELL ADAPTED HAVE BROKEN DOWN ANY RESISTANCE TO ITS USE ON A LARGE SCALE. FOR INDUSTRIAL PURPOSES ITS USE IN COMMERCIAL ENTERPRISES TO INCREASE THE SERVICE OF THE WORKER, IS NOW FULLY APPRECIATED AND IN THE HOME WHERE ITS MOST WIDELY UTILIZED SERVICE FOR COOKING PURPOSES HAS BEEN UNIVERSALLY RECOGNIZED AS NECESSARY FOR THE WELL BEING OF THE HOUSEHOLD. ITS USE FOR WATER HEATING, REFRIGERATION AND GENERAL PURPOSES FOR WHICH ITS HEATING QUALITIES CAN BE ADAPTED IS LIKELY TO BE MORE RELIED UPON IN THE DAYS TO COME.

P. S. Young

I FEEL THAT THE GAS INDUSTRY CAN MEET THE CHALLENGE OF POSTWAR DAYS WITH THE AID OF ITS OWN HOMEMADE TONIC. TAKING OUR OWN MEDICINE MEANS THAT JUST AS WE ARE ADVERTISING AND SELLING NEW, MODERN, ECONOMICAL GAS EQUIPMENT TO OUR CUSTOMERS SO ALSO WE SHOULD PROCEED VIGOROUSLY WITH WORKS ENLARGEMENT AND MODERNIZATION, TRANSMISSION AND DISTRIBUTION EXPANSION AND EXTENSION, GREATER SALES EMPHASIS, AND CLOSER STUDY OF ALL MAKING, DELIVERY AND SELLING COSTS. IN MY BOOK THIS SPELLS MORE JOBS, BETTER SERVICE, LARGER EARNINGS.

Edward F. Barrett

THOSE COMPANIES NOW SERVING NATURAL GAS, OR THOSE TO WHICH IT WILL SHORTLY BECOME AVAILABLE, HAVE AN OPPORTUNITY TO TAKE OVER ALL THE HEATING, COOKING, REFRIGERATION AND WATER HEATING BUSINESS IN THEIR TERRITORY, PROVIDING THEY DEMAND AND GET THE RIGHT APPLIANCES AND PROVIDING ALSO THEY HAVE THE AMBITION AND ORGANIZATION TO GO AFTER THE BUSINESS AND TO PASS ON TO THEIR CONSUMERS THE LOWER RATES THEY EARN BY USING THESE SERVICES. IN ADDITION SCHOOLS SHOULD BE ORGANIZED TO RETRAIN OUR PRESENT INDUSTRIAL SALESMEN AND TO TRAIN NEW INDUSTRIAL MEN TO MAINTAIN OUR PRESENT INDUSTRIAL LOADS AND EXPAND THE LOAD IN THE IMMEDIATE POSTWAR PERIOD.

H. K. Wrench

THE TERMINATION OF THE WAR PRESENTS BOTH A CHALLENGE AND AN OPPORTUNITY. THE CONVERSION OF THE VAST STORE OF KNOWLEDGE GAINED IN SCIENTIFIC AND PRODUCTION DEVELOPMENTS FOR WAR TO PROVIDE BETTER PEACETIME LIVING IS A CHALLENGE TO OUR INDUSTRY. THROUGH THE DEVELOPMENT OF NEW AND IMPROVED APPLIANCES FOR THE HOME AND COMMERCIAL ESTABLISHMENTS, NEW METHODS FOR THE APPLICATION OF GAS IN INDUSTRY AND EXPANSION OF OUR PRESENT MARKETS, WE HAVE AN OPPORTUNITY TO BRING GREATER BENEFITS TO OUR CUSTOMERS, LARGER REVENUES TO OUR COMPANIES, AND TO PROVIDE INCREASED EMPLOYMENT.

E. P. Noppel

NATURAL GAS COMPANIES HAVE BEEN FACED WITH A TREMENDOUS RESPONSIBILITY DURING THE WAR EMERGENCY. DURING A PERIOD OF INCREASING SHORTAGES OF OTHER FUELS, THIS INDUSTRY HAS SUPPLIED RECORD QUANTITIES OF NATURAL GAS FOR RESIDENTIAL, INDUSTRIAL AND COMMERCIAL USES. NATURAL GAS INDUSTRY SURVEYS INDICATE THAT THE INDUSTRY IS IN EXCELLENT POSITION TO EXPAND ITS SERVICE TO THE PUBLIC AND TO OTHER INDUSTRIES, AND WILL CONTINUE TO PRODUCE AND DELIVER INCREASING QUANTITIES OF GAS IN POSTWAR YEARS.

INDUSTRY LEADERS FORESEE AN EXCELLENT OPPORTUNITY TO HELP SOLVE THE POSTWAR EMPLOYMENT PROBLEM. MANPOWER IN THE GAS INDUSTRY CURRENTLY IS ABOUT 10% BELOW 1939, A NORMAL PRE-WAR YEAR. THE PROPOSED EXPANSION OF PLANTS AND TRANSMISSION FACILITIES, DEVELOPMENT OF IMPROVED PRODUCTS AND METHODS OF PREVENTING WASTE AND NEW PROCESSES OF UTILIZATION WILL MEAN MANY MORE JOBS IN POSTWAR DAYS.

R. H. Hargrove

THE GAS INDUSTRY NOW FACES GREATER OPPORTUNITIES THAN EVER BEFORE IN ITS HISTORY, PROVIDING IT IS NOT CRIPPLED BY EXCESSIVE REGULATION. IT HAS THE ADVANTAGE OF DEALING IN A COMMODITY WHICH IS NOT ONLY THE FINEST AND CLEANEST FUEL ON THE MARKET, BUT ALSO CONTAINS SOME OF THE MOST IMPORTANT BASIC ELEMENTS NECESSARY IN OUR INDUSTRIAL FUTURE. IT POSSESSES NO MONOPOLY AND, THEREFORE, MUST TAKE INTO CONSIDERATION A HIGHLY COMPETITIVE MARKET IN WHICH MANAGEMENT, WITH A FULL REALIZATION OF THE VALUE OF PROPER PROMOTION AND THE NECESSITY OF RESEARCH, BOTH FUNDAMENTAL AND ECONOMIC, MAY WELL BE THE DECIDING FACTOR MARKING ITS PROGRESS.

T. J. Strickler

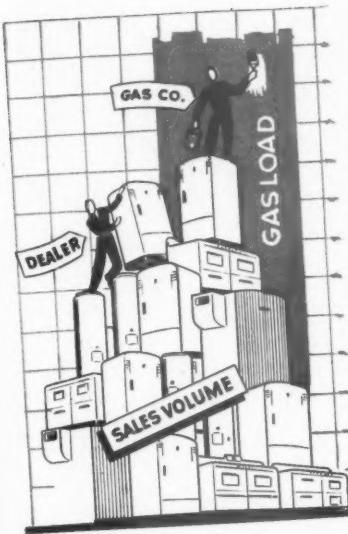
"TO BECOME A DYNAMIC FORCE IN THE NATION'S RECONVERSION FROM WAR TO PEACE AND IN ACHIEVING FOR AMERICA A HIGH LEVEL OF PRODUCTION AND EMPLOYMENT AND A SOUND PEACE-TIME ECONOMY."

THAT IS THE GREATEST OPPORTUNITY - AND THE GREATEST DUTY - OF THE GAS UTILITIES, JUST AS IT IS THE GREATEST OPPORTUNITY AND DUTY OF ALL UTILITIES AND ALL BUSINESS AND INDUSTRY.

WE MUST BEGIN IMMEDIATELY TO DO THE WORK POSTPONED DURING THE WAR, AND THAT INCLUDES CONSTRUCTION, MAINTENANCE, SALES AND RESEARCH AND PROMOTION.

WE MUST RE-EMPLOY OUR SERVICE MEN AND WOMEN; WE MUST GIVE WORK TO AS MANY WAR PLANT WORKERS AS POSSIBLE; WE MUST DO OUR PART IN KEEPING UP THE NATIONAL INCOME SO THE PEOPLE MAY CONTINUE TO LIVE IN PROSPERITY AND IN PEACE WITHIN OUR OWN BORDERS.

B. Rabn



THE GAS INDUSTRY, HAVING COME THROUGH THE WAR WITHOUT SERIOUS IMPAIRMENT TO ITS PLANTS, FACILITIES AND RESOURCES, IS IN AN EXCELLENT POSITION TO EXPLOIT THE POSSIBILITIES OF EXPANSION WHICH ARE FORESEEABLE IN THE POSTWAR FUTURE. NEVERTHELESS, WE, ALONG WITH THE REST OF THE UNITED STATES AND THE WORLD, ARE CONFRONTED WITH THE TREMENDOUS TASK OF RECONVERTING AND READJUSTING OUR ECONOMY TO A PEACETIME BASIS. UNQUESTIONABLY, THIS JOB WILL COMMAND MUCH OF OUR ATTENTION FOR A CONSIDERABLE PERIOD OF TIME FOLLOWING CESSION OF HOSTILITIES, AND THE EXTENT TO WHICH WE WILL BE ABLE TO ENJOY A PERIOD OF POSTWAR PROSPERITY DEPENDS ON OUR SKILL AND THOROUGHNESS IN MEETING AND SOLVING THE PROBLEMS THAT NOW BEGIN TO PRESS IN ON US.

OUR IMMEDIATE JOB IS A MULTIPLE ONE. WE MUST ABSORB THE MILLIONS OF VETERANS WHO ARE NOW RETURNING TO CIVILIAN LIFE. FORTUNATELY, WE IN THE GAS INDUSTRY, WITH A DEPLETED MANPOWER SITUATION AND THE NEED FOR NEW PLANTS AND FACILITIES TO TAKE CARE OF AN EXPANDING BUSINESS, ARE IN A POSITION TO TAKE CARE OF OUR SHARE. WE MUST ADJUST HOURS AND WAGES, A MATTER WHICH HAS TO BE HANDLED WITH DELICACY AND INTELLIGENCE TO AVOID UNREST AND DISSATISFACTION AMONG OUR PEOPLE. WE MUST DO OUR PART IN THE GREAT REPLACEMENT PROGRAM REQUIRED TO RESTORE PREVIOUS HIGH STANDARDS OF LIVING CONDITIONS IN THE NATION.

THESE, IN BROAD, GENERAL TERMS, ARE A FEW OF THE PROBLEMS WE FACE AT THIS MOMENT. WE ARE GOING INTO WHAT MAY WELL BE THE MOST CRITICAL PERIOD IN THE HISTORY OF MANKIND, AND THERE CAN BE LITTLE DOUBT THAT OUR FUTURE STABILITY AND EVEN EXISTENCE DEPEND ON OUR FINDING THE RIGHT ANSWERS. THE GAS INDUSTRY AS A SOUND, STABLE AND CONSERVATIVE NATIONAL INSTITUTION SHOULD BE GIVING THESE PROBLEMS ITS MOST SOBER AND EARNEST CONSIDERATION.

*A. F. Bridge*

THE AMERICAN GAS INDUSTRY NOW HAS BEFORE IT THE TASK OF PROMOTING THE COMFORT AND WELFARE OF ITS CUSTOMERS THROUGH FULL USE OF THE MARVELOUS GAS APPLIANCES SOON TO BE AVAILABLE. IN A HIGHLY COMPETITIVE WORLD, WE MUST NOT LOSE THIS OPPORTUNITY BY FAILURE TO USE EVERY PROMOTIONAL MEANS AT OUR COMMAND TO PLACE GAS SERVICE AND GAS APPLIANCES IN THE FOREFRONT OF AMERICAN PROSPERITY. WITH UNNECESSARY GOVERNMENT RESTRICTIONS REMOVED, THE INDUSTRY CAN DO A GIANT'S SHARE OF INCREASING EMPLOYMENT AND MAINTAINING OUR AMERICAN BRAND OF LIVING, WHICH IS THE WORLD'S HIGHEST. OUR INDUSTRY IS ONE OF THE BASIC FACTORS WHICH HAS MADE POSSIBLE WHAT WE KNOW AS THE AMERICAN WAY OF LIFE, AND THE INDUSTRY CAN HELP TO MAINTAIN THIS WAY OF LIFE IF PERMITTED TO RECRUIT ITS FULL STRENGTH. THE SOUTHWEST, WITH GREAT NATURAL RESOURCES AND VAST RAW MATERIALS, WILL PLAY NO SMALL PART IN THE NATION'S WELFARE AND THE GAS COMPANIES OF THIS SECTION ARE PREPARED TO ACCEPT THE INSPIRING CHALLENGE OF THE FUTURE.

*D. A. Hulcy*

LARGELY AS A RESULT OF THE VARIOUS ACTIVITIES OF THE AMERICAN GAS ASSOCIATION, THE GAS INDUSTRY NOW FINDS ITSELF IN A POSITION IN WHICH ITS THINKING HAS BEEN REMARKABLY COORDINATED, ITS OBJECTIVES HAVE BEEN CLEARLY OUTLINED, AND UNIVERSALLY SUPPORTED.

THE ECONOMIC STUDIES OF ITS POTENTIAL MARKETS AND ITS ABILITY TO SERVE THOSE MARKETS HAVE BEEN CAREFULLY PREPARED. RECOMMENDATIONS FOR INDUSTRY-WIDE APPLICATION OF THE OBJECTIVES OF THE INDUSTRY HAVE BEEN PUBLISHED AND HAVE RECEIVED SURPRISING SUPPORT. THE NEW FREEDOM GAS KITCHEN, TOGETHER WITH DEVELOPMENTS IN KITCHEN VENTILATION, ASSURE THE GAS KITCHEN OF TOMORROW BEING ABLE TO PROVIDE A SUPERIOR SERVICE, WITH A KITCHEN THAT IS "COOLER IN SUMMER, WARMER IN WINTER AND CLEANER THE YEAR AROUND." THE RESEARCH PROGRAMS HAVE BEEN CAREFULLY DEVELOPED TO SOLVE THE PROBLEMS CONFRONTING THE INDUSTRY. SOUND MERCHANDISING PRINCIPLES HAVE BEEN ESTABLISHED AND THE NATIONAL ADVERTISING PROGRAM HAS BEEN FITTED TO THE NEEDS OF THE TIMES.

THEREFORE, IN THE POSTWAR PERIOD THE OPPORTUNITIES THAT LIE AHEAD ARE GREAT. WE HAVE THE TOOLS TO WORK WITH TO PROVIDE A SERVICE TO THE COMMUNITY THAT IS UNEXCELSSED. THE GAS INDUSTRY IS UNITED, AS NEVER BEFORE, TO PROVIDE FOR THE NEEDS OF SOCIETY IN THE POSTWAR PERIOD.

*Herman Russell*

THE TOMORROW OF THE GAS INDUSTRY LOOKS VERY BRIGHT.

WE ARE ON THE THRESHOLD OF THE GREATEST OPPORTUNITIES EVER FACING US.

DURING THE WAR, NEW APPLICATIONS OF GAS TO INDUSTRY AND COMMERCE HAVE WON AN ENVIRABLE REPUTATION FOR THE DEPENDABILITY AND RELIABILITY OF OUR SERVICE. PEACETIME POSSIBILITIES IN THESE FIELDS ARE UNLIMITED BUT WILL REQUIRE THE CONCENTRATED, COLLECTIVE EFFORT OF THE ENTIRE INDUSTRY.

THE DOMESTIC FIELD, OUR "BREAD AND BUTTER" BUSINESS, HOLDS EVEN GREATER PROMISE. SUFFICIENT MONEY HAS BEEN ALLOCATED TO CARRY ON AN AGGRESSIVE CAMPAIGN; FUNDS ARE AVAILABLE FOR RESEARCH AND DEVELOPMENT WORK; APPLIANCE MANUFACTURERS ARE MORE ALERT THAN EVER BEFORE TO THE NEED FOR PRODUCING SOMETHING NEW AND STARTLINGLY DIFFERENT IN THE APPLIANCE FIELD. THE NEW FREEDOM GAS KITCHEN, NOW BEING GIVEN NATIONWIDE PUBLICITY, WILL DO MUCH TO ENCOURAGE GROWTH OF OUR DOMESTIC LOAD.

THE THEREFORE, I FEEL WE CAN LOOK FORWARD TO A PROMISING FUTURE, ENCOURAGED AND INSPIRED BY THE ABLE LEADERSHIP OF MANAGING DIRECTOR CARL WOLF.

*R. G. Barnett*

WITH THE MILLIONS OF NEW HOMES THAT WILL BE REQUIRED IN THE FIRST FEW YEARS AFTER THE WAR, ALL DEMANDING SERVICE; WITH THE NEW DEVELOPMENTS, DOMESTIC, COMMERCIAL AND INDUSTRIAL, THAT HAVE BEEN MADE DURING THE YEARS OF WAR; FURTHER IMPROVEMENTS OF UTILIZATION PROGRAM UNDER WAY FOR THE PIPE LINES BUILT DURING THE WAR AND PROMISING IMPROVEMENTS IN THE PROCESSES OF GAS MANUFACTURE; WITH THE IMPROVED CUSTOMER ACCEPTANCE OF GAS SERVICE, INDUCED BY THE NATIONAL AND OTHER ADVERTISING PROGRAMS—

IT SEEMS TO ME THAT THE GAS INDUSTRY IS IN AN EXCELLENT POSITION TO GROW AND PROSPER IN THE POSTWAR YEARS.

J. A. Brown

AMONG THE MANY OPPORTUNITIES FACING OUR INDUSTRY IT IS NATURAL THAT I EMPHASIZE THOSE BROUGHT ABOUT BY ALL YEAR AIR CONDITIONING. HERE IS A NEW USE FOR GAS, A USE THAT EMPHASIZES THE MODERNITY OF GAS AS A FUEL AND A FITTING COMPANION TO THE FOUR BIG JOBS.

PRIMARILY INTENDED FOR HOME APPLICATION IT FURTHER CEMENTS THE RELATIONSHIP IN TERMS OF SERVICE BETWEEN THE AMERICAN GAS UTILITY COMPANIES AND THEIR CUSTOMERS. BEING NEW IT OFFERS ADDITIONAL EMPLOYMENT NOT ONLY IN THE MANUFACTURE OF THE PRODUCT BUT IN ITS ADEQUATE INSTALLATION AND OPERATION. NEW USES — NEW SERVICES — NEW JOBS — NEW PROGRESS — AMERICAN HISTORY IN THE MAKING.

Louis Ruttenberg

THE GAS INDUSTRY HAS AN OPPORTUNITY TO TAKE A PLACE OF LEADERSHIP IN THE PROGRAM OF RECONVERSION AND BUILDING FOR PEACE TIME PROSPERITY. IN THE RESIDENTIAL FIELD TOOLS HAVE BEEN PROVIDED FOR BUILDING THIS PLACE OF LEADERSHIP BY THE WORK OF THE RESIDENTIAL GAS SECTION DURING THE LAST FEW YEARS. THESE TOOLS INCLUDE THE NEW FREEDOM GAS KITCHEN, THE PROGRAM ON SELECTING, THE TRAINING OF SALES PERSONNEL, AND THE MANUAL OF GAS SERVICE, AND THE ACTIVITIES INCLUDING THE "CP" GAS RANGE TO IMPROVE THE CHARACTER AND INSTALLATION OF APPLIANCES. IF THESE ACTIVITIES, WHICH ARE ADEQUATELY FINANCED THROUGH THE RESEARCH AND PROMOTIONAL FUND, RECEIVE THE WHOLEHEARTED SUPPORT OF THE INDUSTRY, ITS FUTURE IS ASSURED.

J. H. Warden

RIGOROUS NECESSITIES OF WAR HAVE PREVENTED GAS UTILITIES FROM MAKING EXTENSIONS OF THEIR SERVICE TO MANY PEOPLE WHO DESIRE IT. MULTITUDES OF GAS CONSUMING APPLIANCES ARE HIGH ON THE SHOPPING LISTS OF THE PUBLIC. FOR NEARLY FIVE YEARS THERE HAS BEEN AN INCREASING DEFICIENCY IN RESIDENTIAL BUILDING. GAS UTILITIES IN THE POSTWAR PERIOD WILL HAVE THE OPPORTUNITY OF CATCHING UP ON THE ACCUMULATED DEMANDS FOR THEIR SERVICE IN NORMAL FIELDS.

THERE SEEMS TO BE AN EXCELLENT OPPORTUNITY AHEAD OF US FOR PRODUCTION RESEARCH, INTENSE COMMERCIAL ACTIVITY, AND HARD WORK IN BEHALF OF OUR GREAT INDUSTRY.

Charles M. Cohn

AT THE OUTBREAK OF WORLD WAR II INDUSTRY IN THE UNITED STATES WAS FACED WITH A TREMENDOUS AND MONUMENTAL TASK. THE PROBLEM OF SUPPLYING THE SINWES OF WAR FOR THE MOST HIGHLY MECHANIZED ARMY AND NAVY AND AIR FORCE THE WORLD HAS EVER SEEN WAS SO VAST AND SO FAR REACHING THAT IT STAGGERED THE IMAGINATION OF THE MOST COURAGEOUS INDUSTRIAL LEADER. THERE WAS NO HESITATION, AND INDUSTRIAL LEADERS TACKLED THE PROBLEM WITH THE FIRM DETERMINATION OF SEEING IT THROUGH IN SPITE OF ALL OBSTACLES. THE RECORD OF ASTOUNDING RESULTS SPEAKS FOR ITSELF; IT HAS NEVER BEEN EVEN APPROACHED BEFORE.

IN ACCOMPLISHING THIS RECORD OF ACHIEVEMENT THE GAS INDUSTRY PLAYED AN OUTSTANDING PART, FOR HEAT IS THE ESSENCE OF ALL MANUFACTURING. IT IS USED SOMEWHERE IN EVERY PROCESS. THE INDUSTRY TOOK THE GREATLY INCREASED RESPONSIBILITY IN ITS STRIDE WITHOUT HESITATION, AND THE JOB WAS DONE. THE WORKING OUT OF THE PROBLEMS OF GREATLY INCREASED CAPACITY DID NOT REQUIRE ANY RADICAL DEPARTURE FROM THE NORMAL, EXCEPT FOR ACCELERATED EXPANSION. THEREFORE, IN ANY POSTWAR PROBLEMS OUR INDUSTRY WILL NOT HAVE THE RECONVERSION PROBLEMS THAT SO MANY OTHER INDUSTRIES WILL HAVE. WE HAVE LEARNED A GREAT DEAL IN IMPROVED TECHNICAL METHODS — OF UTILIZATION AND OF AUGMENTING SUPPLY — AND WE HAVE COME TO REALIZE MORE THAN EVER HOW VITALLY ESSENTIAL HEAT APPLICATION IN ALL FORMS IS TO ALL OTHER INDUSTRIES.

WE STAND IN A KEY POSITION, THE VERY CENTRE OF THE MANUFACTURING WEB. NEXT TO ADEQUATE SUPPLY OF RAW MATERIAL AND LABOR, THE UTILIZATION OF HEAT IS FUNDAMENTAL — AND THE GAS INDUSTRY TODAY IS IN A BETTER POSITION THAN EVER BEFORE TO SOLVE THE TECHNICAL PROBLEMS OF HEAT APPLICATION PRESENTED BY COUNTLESS POSTWAR ACTIVITIES.

THE COMING AGE WILL BE ONE OF RESEARCH AND GREAT ADVANCES IN ALL FORMS OF HUMAN ENDEAVOR. EVERYTHING WILL BE DONE ON A MORE EFFICIENT AND LARGER BASIS THAN EVER BEFORE. TECHNOLOGY WILL BE MOST VITAL, AND THE WIDE RANGE OF HEAT APPLICATIONS IN THOUSANDS OF DIFFERENT WAYS — WILL MAKE GAS THE BASIC PURVEYOR OF HEAT IN ALL ITS FORMS. OUR OPPORTUNITY WILL BE GREATER THAN AT ANY TIME IN OUR HISTORY; LET US ACCEPT THE CHALLENGE AND DEMONSTRATE CLEARLY THAT "IF IT IS DONE WITH HEAT, IT CAN BE DONE BETTER WITH GAS!"

Walter C. Beckjord

EVERY BUSINESS FORECAST FOR THE NEXT DECADE SPELLS OPPORTUNITY . . . 820,000 NEW DWELLING UNITS ANNUALLY! . . . \$140,000,000,000 GROSS NATIONAL PRODUCT! . . . 175% FEDERAL RESERVE BOARD INDEX OF PRODUCTION!

THIS MEANS THE ANNUAL GAS HEATING SALES COULD DOUBLE THOSE OF 1940; AUTOMATIC STORAGE WATER HEATER SALES COULD RISE TO 1,200,000 UNITS ANNUALLY; GAS RANGES COULD REACH ALMOST 4,000,000.

BUT THE OIL BURNER MANUFACTURERS ARE PLANNING ON 500,000 UNITS PER YEAR, RAISING THEIR TOTAL INSTALLATIONS FROM 2,000,000 IN 1944 TO 4,500,000 IN 1950; AND THE STOKER MANUFACTURERS EXPECT TO SELL 300,000 UNITS ANNUALLY INSTEAD OF 190,000 IN THEIR BEST PRE-WAR YEAR. (HOW MANY GAS RANGE AND WATER HEATER SALES WILL ACCOMPANY THESE OIL BURNERS AND COAL STOKERS?) IN ADDITION, MANUFACTURERS OF ELECTRIC RANGES ARE QUITE CONFIDENT OF ATTAINING A 1 TO 1 RATIO WITH THE GAS RANGE. THESE COMPETITORS ARE PEOPLE OF GREAT ABILITY, STRENGTH AND AGGRESSIONESS.

OPORTUNITY IS KNOCKING ON OUR DOOR . . . THERE IS NO DOUBT OF THAT. WILL WE LET IT ENTER? THE ONLY WAY IT CAN ENTER IS THROUGH GAS UTILITY MERCHANTISING LEADERSHIP IN ALL PHASES OF THEIR LOAD-BUILDING POSSIBILITIES.

Lyle C. Harvey

IT SEEMS TO ME THAT THE GREATEST OPPORTUNITY FACING THE LEADERS OF THE GAS INDUSTRY AT THIS WAR'S END HAS NOTHING TO DO WITH THE TECHNOLOGY OF THE INDUSTRY. IT IS RATHER TO JOIN THE FIGHT TO RETAIN OUR AMERICAN WAY OF LIFE. ENCROACHMENT THEREON HAS PROCEEDED UNDER MANY GUISES, INCLUDING THE NECESSITIES OF WAR. ONLY A DETERMINED FIGHT AGAINST THE FALLACIES INHERENT IN THE POSITION OF UNLIMITED GOVERNMENT OFFERS ANY HOPE THAT FREEDOM, AS WE KNOW IT, CAN ENDURE. THERE WILL BE NO ULTIMATE OPPORTUNITY FOR INDUSTRY OR INDIVIDUAL UNLESS THAT FIGHT IS WON.

C. E. Packman

OPPORTUNITIES FACING THE GAS INDUSTRY AT THE END OF THE WAR ARE NOT THOSE RESULTING FROM RECONVERSION TO A NEW OR GLAMOROUS TYPE OF PRODUCT. THEY WILL COME ONLY FROM IMPROVEMENT IN A LONG ESTABLISHED SERVICE. THERE MAY WELL BE EXPANSION INTO SOME NEW FIELDS, PARTICULARLY THOSE OF HOME HEATING AND ALL YEAR AIR CONDITIONING, BUT THIS MAY NOT DEVELOP IMMEDIATELY.

TO TAKE FULL ADVANTAGE OF THESE OPPORTUNITIES WE MUST COORDINATE OUR EFFORTS IN MARKETING, PRODUCTION AND RESEARCH. WE NEED TO TELL OUR STORY AT LEAST AS LOUDLY AS OUR COMPETITORS, BUT WE MUST ALSO BE READY TO DELIVER THE GOODS.

L. E. Knowlton

WITH THE FINAL AND COMPLETE CESSION OF HOSTILITIES, AMERICAN INDUSTRY STANDS ON THE THRESHOLD OF AN INCOMPARABLE OPPORTUNITY.

DURING THE WAR YEARS, AMERICA'S GREAT GAS INDUSTRY HAS ACQUITTED ITSELF WITH SIGNAL AND EMINENT DISTINCTION—UTILITIES AND MANUFACTURERS OF GAS APPLIANCES HAVE RENDERED A VITAL WARTIME SERVICE TO THEIR COUNTRY.

IN A SENSE THE WAR HAS PROVED AGAIN THAT THE GAS INDUSTRY IS YOUNG, SPIRITED, AND FULL OF VIGOR.

OUR INDUSTRY MUST, AND I AM CONFIDENT SHALL, FACE THE TRYING DAYS JUST AHEAD WITH ZEAL, CLINGING TO THOSE VIRTUES AND TRADITIONS THAT STRENGTHEN OUR OPPORTUNITY WITH THE YEARS.

OUR OPPORTUNITY IS NOW—THE HOUR IS AT HAND . . . THEY WERE—THEY ARE—AND NOW WITH CONFIDENCE AND COOPERATION IN EACH OTHER—WE'VE GOT TO KEEP 'EM COOKING WITH GAS, AMERICA'S PREFERRED FUEL!

F. J. Hoenigmann

## PRAYER AFTER TRIUMPH

By Joseph Auslander

In this grave hour of triumph  
Which Thy hand, Lord, hath wrought,  
Humble us yet, lest we forget  
The things for which we fought.

Help us retain the fervor  
Of faith, lest, flushed with pride,  
We loudly boast, nor heed the host  
Of martyrdom who died.

When we bestow the laurel,  
When the bright list is named,  
Lord, hold in mind the brave men blind,  
The heroes halt and maimed.

Now, having seen the horror  
Which hate can make men do,  
Keep clean the sword of freedom, Lord,  
And search our own hearts too.

When we have done with battle,  
When drums and trampings cease,  
Be with us then and rouse in men  
As fierce a zeal for peace.

Reprinted from Saturday Evening Post, published by the Curtis Publishing Company

# Forward Retires October 1, Wolf Elected Managing Director of Association



Alexander Forward

**A**LEXANDER FORWARD, managing director of the American Gas Association for the past 22 years, will retire from active business October 1, 1945. Mr. Forward will be succeeded as managing director by H. Carl Wolf, president of the Atlanta Gas Light Company, Atlanta, Ga., it was announced August 6 by J French Robinson, president of the Association.

Mr. Wolf was born in Edwardsville, Illinois and graduated from the University of Illinois, having earned both his bachelors and masters degrees in electrical engineering. He entered the utilities field as assistant engineer for the Illinois Commerce Commission and later became manager of the Edwardsville (Illinois) Water Company. In World War I, he was a captain in the United States Engineer Corps, serving 18 months in France as a combat engineer and with the American Peace Commission.

From 1922 to 1929, Mr. Wolf was chief engineer of the Public Service Commission of Maryland. He became assistant to the president of the Central Public Service Corporation and later was elected vice-president of Consolidated Electric and Gas Company and then president of the Central Indiana Gas Company and its associated companies.

Mr. Wolf was elected president of the Atlanta Gas Light Company in 1938, and until recently he also served as pres-

ident of the Mobile Gas Service Corporation and Florida Public Utilities Company. He has been a director of the American Gas Association since 1941 and in 1942 was appointed chairman of the Association's National Advertising Committee. He is a director of the First National Bank of Atlanta, past president of the Indiana Gas Association and the Southern Gas Association and past chairman of the Industrial and Commercial Gas Section of the American Gas Association. Mr. Wolf also is serving as Regional Chairman of the Committee for Economic Development for the Sixth Federal Reserve District. As managing director of the Association, Mr. Wolf will play an important part in directing the vastly expanded program of research, sales promotion and advertising for which the gas industry and allied companies throughout the country have pledged more than \$1,500,000 a year for the next three years.

Mr. Forward, who is retiring after twenty-two years as executive head of the Association, began his business career as a newspaper man. He was on the staff of leading newspapers and served as managing editor for dailies in Virginia. He was secretary to the Governor of Virginia from 1914 to 1918; attended military training camp at Plattsburgh in 1916 and was appointed president of the Virginia Division, Military Training Camps Association, charged with examination and recommendation to the War Department of candidates for officers in World War I.

He was appointed a member of the Virginia State Corporation Commission in February, 1918, but took leave of absence to become director of relief supplies to the Balkan States, with headquarters successively in Rome, Athens, Salonica and Bucharest. In appreciation for his meritorious work, Major Forward was decorated an officer of the Order of the Crown of Rumania.

Mr. Forward returned to his duties with the Virginia Commission in 1919 and served as State Fuel Administrator in 1922. He was re-elected to the Virginia Commission but resigned in 1923 to become managing director of the American Gas Association. During his 22 years of service, the annual budget of the Association has increased from \$255,000 to \$2,000,000 and it has become the national organization for the development and coordination of the five billion dollar gas industry.



H. Carl Wolf

## Staff Honors Forward

**M**EMBERS of headquarters staff of the American Gas Association paid tribute last month to retiring managing director, Alexander Forward, at a special luncheon at the Hotel Biltmore, New York City. The occasion was held August 20, Mr. Forward's birthday anniversary, and was a surprise affair. It was featured by the presentation to Mr. Forward of an engraved pen and pencil set as a token of appreciation from the staff.

The sentiments of the staff were well expressed by John W. West, Jr., assistant managing director, who acted as master of ceremony and made the presentation. He said in part:

"We have not gathered here to express our admiration or give farewell testimony to the excellence of your twenty-two years of service to the industry as managing director, although that has meant a great deal to each of us. Indeed that is not necessary. The vote of confidence represented by the growth of the Association gives best testimony to that fact, and more testimony is doubtless in the offing."

"Rather, I feel that we are here for the purpose of expressing in some small degree our appreciation for what your personality, your character and your services while managing director, have

(Continued on page 419)

# The Coming Natural Gas Investigation

A clarification of the natural gas industry's position and responsibility in the far-reaching investigation of the Federal Power Commission now beginning



R. H. Hargrove

THE announcement on September 10, last year, that the Federal Power Commission was planning to proceed with a natural gas investigation of its own instigation was met with various shades of opinion among natural gas executives.

The attitudes covered a wide range, including frank and alarmed apprehension. Oil company officials were also very much on the anxious seat, for they saw the investigation as an opening which might lead to control of the production of natural gas through placing restrictions on its end uses. The petroleum industry apprehended a fact which may not have been entirely clear to the commission at the time, that any control affecting the production of natural gas would also affect the production of oil.

## State Commissions Concerned

With opinions predicated largely on this same reasoning, and because of an understandable concern over their own individual jurisdictions, the conservation commissions of most of the gas producing states also displayed deep concern over the proposed investigation. So much so, in fact, that in recent weeks the F.P.C. has found it advisable to issue a number of disclaimers of ambition for power beyond that which it now exercises under the natural gas act.

Opposition to its project, notwithstanding, the F.P.C. is proceeding in its investigation, with the first hearing scheduled for Kansas City on September 18, and thereafter in Oklahoma City on October 9, New Orleans on October 30 and Dallas on November 27.

\*Vice-president and general manager, United Gas Pipe Line Co., Shreveport, La.

BY R. H. HARGROVE\*

Chairman, Natural Gas Department,  
American Gas Association

As an aid to its own personnel in projecting the scope and the latitude of the investigation and presumably as a guide to the various companies and individuals who will desire to make themselves heard in the hearing, the commission has issued a lengthy "Outline of Principal Topics" to be covered.

This document lists over 150 individual topics that are presumed to come within the puerve of the inquiry, and covers a field so vast that only a complete and exhaustive inquiry into the entire fuel energy resources of the United States would adequately satisfy its implications.

## Complete Study Requires Years

The study thus envisioned, if carried to its ultimate, would be a matter that would require years to complete, and would involve the expenditure of substantial amounts of public funds, with an even greater financial and manpower burden laid on the fuel and power industry. Since it is entirely probable that a complete energy study will one day be launched, under the aegis of investigators working under congressional authorization, it is reasonable to assume that the commission is not primarily concerned at this time with rationalizing the complex and conflicting elements of the entire national fuel picture.

But questions of the commission's powers, its jurisdictions and their scope have become rather academic at the present time in view of the fact that the investigation is going ahead, the hearings are scheduled to start within a few weeks, and particularly since the natural gas obstructionists are straining for the opportunity to present their version of the considerations under which future regulation of natural gas should be guided and decided.

If it is true, as had been contended by many informed commentators, that the investigation may provide the background for new legislation designed to aid and perhaps grant economic subsidies to competing fuel industries, that merely enhances the necessity that the natural gas industry be ready to meet such maneuvers with a strategy as astute as that of its opponents.

The attitude of the American Gas Association in this connection has been in a large measure already determined by the composite attitude of natural gas executives who have given the matter their most thoughtful study.

Officially the A.G.A. has by tradition and policy steered clear of any political activity in connection with legislation pending or proposed, or even legislation that might conceivably be regarded as desirable by the industry at large. The criticism has often been raised that the association in so doing has managed to limit and restrict its potential usefulness to the gas industry. The question of whether the opprobrium attached to the public revelation of utilities engaging in political activity is compensated for by the benefits that might accrue is a moot one. Certainly the present A.G.A. policy is a prudent one, and places the association in an excellent position to render important service to the industry in the matter of making available the vast wealth of statistical data assembled over many years.

## Industry Steering Committee

The industry's position at the forthcoming hearings will be presented under the guidance of the Natural Gas Industry Steering Committee, a recently organized independent group of industry leaders from all sections of the country. To be most helpful, the attitude of the Steering Committee should be one of cooperation with all elements of the natural gas industry and with the Federal Power Commission as well. Cooperation with the Commission, how-

ever, does not imply industry responsibility for the compiling of information germane to all of the 150 points set down in the "Outline of Principal Topics."

The industry's immediate stand should take into consideration that there are in reality two distinct aspects to the forthcoming investigation. One leads to an imperative and immediate objective in the interest of public comfort and necessity, that of clarification of Commission procedure and prerogatives under the existing natural gas act; the other has implications much more far reaching and complex, for it is concerned with the ultimate formulation of a national fuel policy.

Naturally the Commission will want, and the natural gas industry will desire it to have, the services of the most competent witnesses that can be found.

There are many subjects (notably: reserves; production problems; definition and extent of physical waste; economics of natural gas transmission; present utilization policies and the potentialities of future utilization) that are so controversial as to be held in various opinions. And since the attitudes of the individuals and of the states may be different, it is obvious that the Commission will attempt to gather opinions from several authorities on every topic considered. At this point

the industry responsibility becomes very apparent. It is to see that there shall be presented at the hearings full and complete information bearing upon all phases of industry problems from an industry viewpoint as distinguished from a detached and uninformed viewpoint.

As a further evidence of its willingness to cooperate, the Steering Committee of the Natural Gas Industry should consider itself in continued session to advise with the Commission during whatever time is required for the complete investigation.

It is obvious that the Federal Power Commission has a monumental task

ahead if it proposes to do a thorough and exhaustive job of researching the natural gas industry. The implications of the investigation are too far-reaching for the natural gas industry to adopt a complacent attitude. On the contrary it should see that a complete and detailed examination of every important phase and factor of the industry which may be placed under scrutiny is presented in its proper light.

The industry has a right to insist and a duty to see that the inquiry be limited to specific practical objectives and that every pertinent fact be read into the record before a single legislative recommendation is made.

## Steering Committee Named for Natural Gas Hearing

ANNOUNCEMENT of the names of the industry members who will serve on a steering committee and those who will head the various subcommittees appointed to prepare the natural gas industry's case during the Federal Power Commission Investigation hearings, scheduled Sept. 18, was made July 23.

The steering committee and the subcommittees will use the services of E. Holley Poe and Associates, nationally known natural gas engineers, as well as other consultants and personnel from the industry in coordinating material.

Members of the steering committee are: E. Buddrus, Panhandle Eastern Pipe Line Co., Chicago, Ill.; D. D. Harrington, Hagy, Harrington and Marsh, Amarillo, Tex.; Paul Kayser, Gulf States Oil Co., Houston, Tex.; Joseph Bowes, Oklahoma Natural Gas Co., Tulsa, Okla.; William H. Wildes, Republic Natural Gas Co., Dallas, Tex.; Walter C. Beckjord, Columbia Gas and Electric Co., New York City; J. F. Robinson, East Ohio Gas Co., Cleveland, Ohio; R. W. Hendee, Colorado Interstate Gas Co., Colorado Springs, Colo.; William Moeller, Southern California Gas Co., Los Angeles, Calif.; B. R. Bay, Northern Natural Gas Co., Omaha, Neb.; F. S. Kelly, Arkansas Natural Gas Co., Shreveport, La.; N. C. McGowen, United Gas Pipe Line Co.; Shreveport, La.; John A. Ferguson, Independent Natural Gas Association of America, Washington, D. C.; S. B. Irelan, Cities Service Gas Co., Oklahoma City, Okla.; Rex Baker, Humble Oil and Refining Co., Houston, Tex.; Don Emory, Phillips Petroleum Co., Bartlesville, Okla.; E. V. Kesinger, Natural Gas Pipe Line Co., Chicago, Ill.; R. H. Hargrove, United Gas Pipe Line Co., Shreveport, La.; Richard Alden, Phillips Petroleum Co., Bartlesville, Okla.; E. L. Rawlins, United Gas Pipe Line Co., Shreveport, La.

Chairmen of the subcommittee are: Com-

mittee on Gas Reserves: W. H. Wildes; Committee on State Commissions and Public Interest: D. A. Hulcy, Lone Star Gas Co., Dallas, Tex.; Committee on Interstate Natural Gas Pipe Line Economics: E. V. Kesinger; Committee on Natural Gas Utilization, End Use and Competitive Fuels: R. H. Hargrove; Committee on Chemical Use of Natural Gas: Richard Alden; Committee on Natural Gas Production and Gathering: E. L. Rawlins.

## Natural Gas Used to Make Calcium Carbide

A NEW method for making calcium carbide, in which crushed limestone is combined with natural gas instead of with crushed coke as in present practice, is offered by two chemists of Dallas, Texas, Dr. A. J. Abrams and Dr. L. B. Cook, for patent 2,380,008. Calcium carbide is one of the most important of present-day industrial materials, being the most convenient source of acetylene used in welding torches, portable lamps, etc.

In the new method, crushed limestone is heated in an electrical induction furnace to a temperature of about 1000 degrees Centigrade, while natural gas containing a high percentage of methane is flowed through it. A second heating at a higher temperature, in the neighborhood of 1700 degrees Centigrade, completes the conversion into calcium carbide.

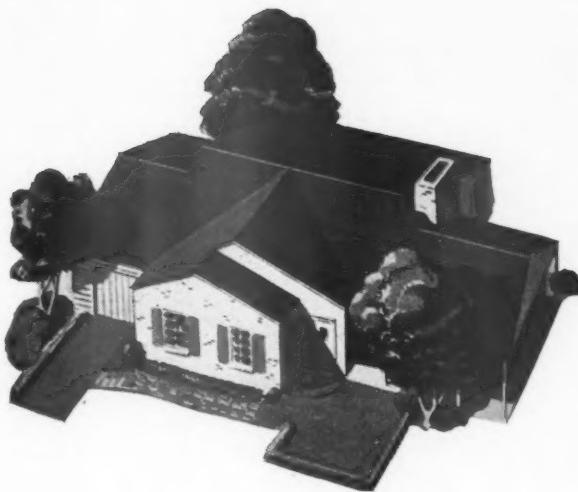
The new method, the inventors point out, permits the manufacture of calcium carbide in regions where coke is not cheaply available, and also provides a good economic use for methane, which has long been a chemical waif among the more easily utilized, larger hydrocarbon molecules that make up the mixture known as natural gas.—*Science News Letter*, July 28, 1945.

## "Enterprise?"

One of the most interesting and significant opinion polls reported recently by Dr. Gallup and the American Institute of Public Opinion revealed that 70 per cent of the people do not know what is meant by the term, "free enterprise." This finding should be highly suggestive to manufacturers and others who are endeavoring to build favorable public attitudes toward the system of private initiative and opportunity, and should result in greater efforts to interpret ideas in this field.

The Gallup poll showed not only that only about 30 per cent of the people interviewed have a clear conception of the term "free enterprise," but that of the remaining 70 per cent, many have a definite antagonism toward it.

Yet the fact that the basis of the enterprise system is opportunity for every individual suggests that the universal appeal to self-interest which it should make has not been successfully developed.



## Goals for Postwar Housing

Vast public and private resources are marshalling to overcome the great deficit in housing and meet the challenge of VJ-Day

BY GEORGE W. BEAN

*Fuel Consultant, American Gas Association, Washington, D. C.*



George W. Bean

This article is written in an effort to give a clear picture of the Government agencies interested in housing, how they tie in with private housing interests, and a forecast of postwar housing needs. The facts are as of today. No one can foretell what changes may be made after VJ-Day.

The American home is the foundation on which this great nation is built and the average American is better housed than any other human being on earth. However, the American homeowner has been unable to build, repair or modernize his home since 1939, and as fast as materials and labor become available there will be a grand rush of building throughout the United States.

During the war the only housing permitted was for war workers near great

industrial centers producing war materials. This housing, while designed to provide a decent and comfortable place for war workers to live, was decidedly substandard. It was built as quickly as possible using the least possible amount of critical materials. About 79 percent of this war housing was privately financed and the remaining 21 percent was publicly financed.

There were two kinds of war housing, temporary and permanent. It is the intention of the National Housing Agency to demobilize the temporary war housing as fast as the need declines in the war effort and in a manner which will permit salvage of materials and equipment having a commercial value and suitable for resale. The publicly financed permanent war housing will be sold for private residential purposes at full market value. If the community in which the project is located deems it advisable to be used for low-rent housing and slum clearance purposes, Congress may grant permission as this was included in a Bill recently introduced in Congress. Veterans will be given preferential status in allocating space to prospective tenants.

Before VE-Day the War Production Board's housing program for 1945, con-

sisted of 85,000 dwelling units to relieve extremely congested areas. However, there will be no occupancy restrictions, the cost will be limited to \$8,000 and rents cannot exceed \$65.00 per unit. This will all be private housing.

Since VE-Day the War Production Board has been gradually easing controls over maintenance and repairs for homes and at the present writing permission is given to make a repair or an addition to a home in the amount of \$1,000 without authorization from the agency. When final restrictions are lifted on building it is believed that the major problem facing us will be the scarcity of lumber. For sometime to come there will also be a shortage of labor, but when building begins to boom again the demand for labor in all trades will go far toward supplying the 60 million jobs promised after the war. It is believed that within 90 days after VJ-Day the housing program, both private and public, will be in full swing.

Let us take a glance at a prewar building period. From the chart given below you will note that in the period from 1920-39 an average of four hundred and eighty-eight thousand homes were built annually at a total cost of \$2,140,000,000. However, the first ten-year period from 1920-29 was far more active than the period from 1930-39. During the first mentioned period there were a total of 703,000 non-farm dwellings built at a total cost of \$3,113,000,000, while during the second period there were only 273,000 non-farm homes built at a total cost of \$1,000,000,000.

This sharp contrast is caused by the economic condition of the country. From 1920-29 the country enjoyed a period of prosperity to be followed by ten years of economic depression. It is believed by many people that home construction has an important influence upon the economic and employment stabilization of the country. The future of building will probably be more planned than speculative. Communities should ascertain their housing needs by studying jobs, wages and population trends.

The special Senate Subcommittee on Postwar Economic Policy and Planning held hearings covering a seven-months period from June, 1944, to February, 1945, on postwar housing. The Administrator of the National Housing

## Potter to Coordinate Federal Building

Hugh Potter nationally-known home development authority, of Houston, Texas, has been appointed construction coordinator by War Mobilizer John Snyder. He will be chairman of a committee composed of eight agencies and two departments. The departments are Labor and Commerce and the agencies include O.P.A., W.P.B., W.M.C., N.H.A. and others. He will report direct to Mr. Snyder who will issue the necessary orders to agencies to clear up construction bottlenecks.

Mr. Potter has been well known to the gas industry since 1938 when he served on a Jury of Awards for the All-Gas Home Architectural Competition sponsored by the American Gas Association. At that time he was chairman of the Houston City Planning Commission; owner and president of the River Oaks Corporation; president, Houston Real Estate Board and ex-president, National Association of Real Estate Boards.

Agency, John B. Blandford, Jr., presented a comprehensive report at these hearings covering the future housing needs of the American home-owner. A goal of 12,600,000 units of new housing was set for non-farm families between 1946 and 1955, or an average of

<sup>1</sup> Blandford, John B. Jr., Administrator, N.H.A., Postwar Economic Policy and Planning, p. 1259.

<sup>2</sup> Source—Federal Home Loan Bank Administration.

1,260,000 a year. About one-half of this need for new construction is based upon the estimated increase in the number of families which, of course, is drawn from census figures. The other half of the need for new construction is based upon the goal of replacing a number equal to one-half of non-farm units substandard in 1940, plus those becoming substandard after 1940. For the purpose of this estimate, substandard units in metropolitan areas are those without private baths and toilets, or needing major repairs. In other areas, only those units needing major repairs are classified as substandard. In formulating the total need, a 5 percent vacancy allowance has been regarded as desirable. In the pre-war period not more than 60,000 units have been taken down a year, but this goal is about 600,000.<sup>1</sup> A summary is given in the accompanying chart.

How will this postwar housing challenge be met? The resources may be divided into four groups. Namely, (1) the Housing Industry and its Organization, (2) the Home Financing Industry and its Organization, (3) Housing Tools Made Available by State and Local Governments and (4) Federal Aid for Housing and Home Financing.

(1) *The Housing Industry and its Organization.* In 1938 there were an estimated 75,000 builders of houses. Before wartime curtailments there were probably 20,000 full-time active building organizations and one hundred,

seventy-five thousand building sub-contractors. The 1940 census listed 142,754 real estate agents and proprietors and 20,869 architects.

Housing is predominately a local business. Building contractors do about two-thirds of their work in their home city and most of the balance in their home state. House-building is a highly competitive business.

(2) *The Home Financing Industry and its Organization.* In 1940, about 55 percent of existing owner-occupied non-farm housing was debt free. However, much of this was originally financed by mortgages which had been retired. Mortgage loans are carried by six different types of lenders; namely: savings and loan associations, life insurance companies, mutual savings banks, commercial banks, Home Owners' Loan Corporation, and individuals. In 1940 the percentage carried by each type of lender was as follows:<sup>2</sup>

Savings and loans associations	21.4%
Life insurance companies	9.2
Mutual savings banks	14.1
Commercial banks	11.0
Home Owners' Loan Corporation	10.2
Individuals and others	34.1
Total	100.0%

(3) *Housing Tools Made Available by State and Local Governments.* Perhaps the most famous housing means made available by state and local governments are the State Planning Laws. Thirty-four states and the District of Columbia have general laws authorizing the establishment of local planning agencies, with power to prepare comprehensive plans for the development or improvement of their communities. These local agencies, usually called planning commissions, do not have financing powers nor do they engage in general development activities beyond the planning stage. They serve as a guide to municipalities.

Another State tool is the zoning law which is covered in every state and the District of Columbia. This law seeks to protect the character of existing sound neighborhoods, and to implement a plan for development of future neighborhoods and communities.

In addition there are various local controls tying in more closely with the building and maintenance processes such as building codes, fire prevention

ANNUAL VOLUMES OF RESIDENTIAL CONSTRUCTION—NUMBER AND CONSTRUCTION COST OF NEW NONFARM DWELLING UNITS STARTED, 1920-39

Year	Number of new nonfarm dwelling units started	Construction cost of new nonfarm dwelling units started <sup>1</sup>	Year	Number of new nonfarm dwelling units started	Construction cost of new nonfarm dwelling units started <sup>1</sup>
1920	247,000	\$1,068,000,000	1933	93,000	\$ 285,000,000
1921	449,000	1,771,000,000	1934	126,000	368,000,000
1922	716,000	2,957,000,000	1935	221,000	757,000,000
1923	871,000	3,775,000,000	1926	319,000	1,271,000,000
1924	892,000	4,065,000,000	1927	336,000	1,382,000,000
1925	937,000	4,475,000,000	1938	406,000	1,584,000,000
1926	849,000	4,112,000,000	1939	515,000	1,948,000,000
1927	810,000	3,910,000,000			
1928	753,000	3,613,000,000			
1929	509,000	2,453,000,000	Averages:		
1930	330,000	1,494,000,000	1920-39	488,000	2,140,000,000
1931	254,000	1,105,000,000	1920-29	703,000	3,113,000,000
1932	134,000	407,000,000	1930-39	273,000	1,060,000,000

<sup>1</sup> Estimated construction cost, exclusive of land cost.  
Source: National Bureau of Economic Research and Bureau of Labor Statistics.

and electric codes, tenement housing and multiple dwelling ordinances, sanitary codes and licensing laws.

Since 1935, 39 states, the District of Columbia, Puerto Rico and Hawaii have enacted local housing authority laws, under which about 325 local authorities are actively engaged in land acquisition, slum clearance, and the operation and construction of housing projects, including both low rent and war housing.

(4) *The Present Federal Tools for Housing and Home Financing.* Under Executive Order in 1942, all Government housing agencies and activities, formerly carried on by 17 different agencies and administrative units, were consolidated under the direction of the National Housing Agency. This Agency consists of three main units: The Federal Home Loan Bank Administration, Federal Housing Administration and the Federal Public Housing Authority.

### The Federal Home Loan Bank Administration

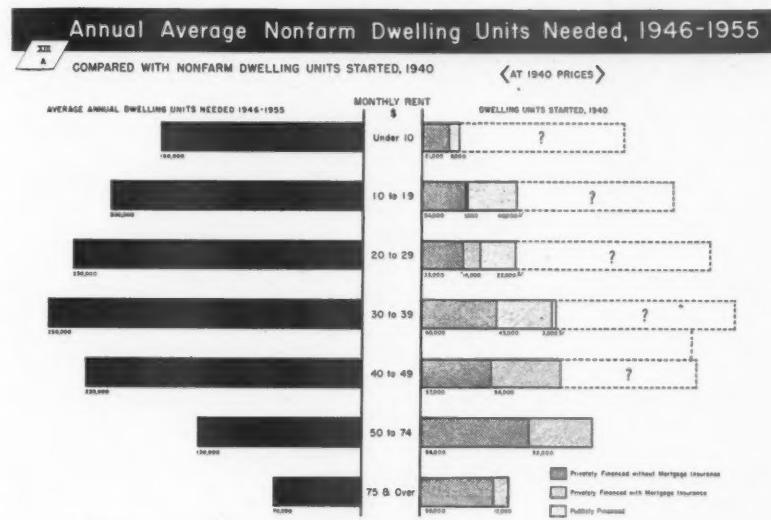
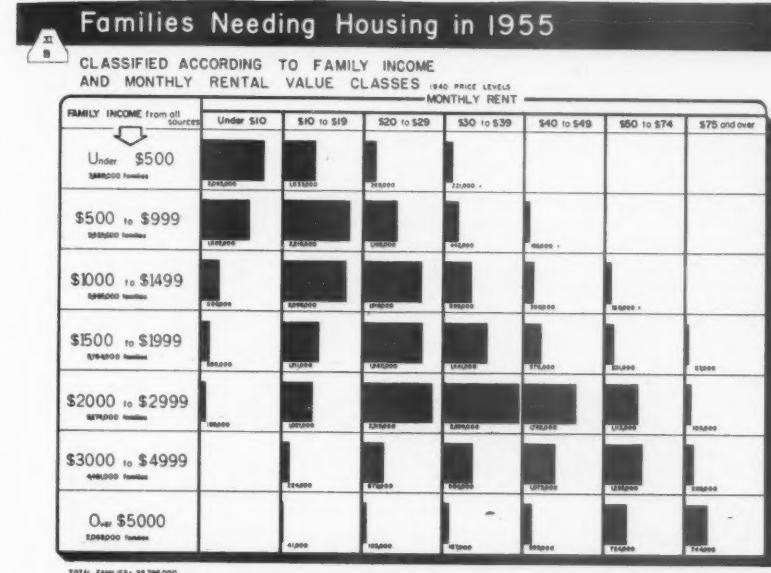
The Federal Home Loan Bank Administration is divided into three different activities: The Home Owners' Loan Corporation program, The Federal Home Loan Bank System and the Federal Savings and Loan Insurance Corporation program.

The H.O.L.C.'s main job now is to complete the liquidation of its emergency lending program of the mid-thirties, when it made rescue loans to over 1,000,000 distressed home owners. By the end of October, 1944, these investments had been reduced by 67 percent.

The chief function of the 12 regional Federal Home Loan Banks is to supply, primarily on first-mortgage collateral, funds required by member institutions

## Glass House

• People who intend to live in glass houses in the future (after reaching an agreement with their neighbors regarding stones, of course) will have an opportunity to see what one looks like at Bamberger's department store in Newark, N. J. A model, one-twelfth actual size, of a house with an outer structure 40 per cent glass, went on display August 22, courtesy of the Pittsburgh Plate Glass Company, which is prepared to fabricate them full size for \$6,000 to \$8,000 each.



to meet home-financing needs in their communities and the withdrawal demands of savers and their investors. Basically, the banks obtain funds through capital subscriptions made in part by the Federal Government and in part by their members, through borrowings in the national money market and through deposits on the part of other banks in the system and member institutions.

As of September 30, 1944, the 12 Federal Home Loan Banks had 3,706 members with aggregate assets of ap-

proximately \$6,945,000,000, including three thousand, six hundred and sixty-six savings and loan associations, twenty-two mutual savings banks and 18 insurance companies. On the basis of pre-war figures the average size of the mortgage loans was \$2,500, and, generally speaking, the program probably concentrates upon homes in the \$2,500 to \$6,000 price range. The entire bank system is self-sustaining.

The Federal Savings and Loan Insurance Corporation was established by Congress in 1934, to do for savings and

**WHERE PROSPECTIVE OWNERS EXPECT TO  
BUILD OR PURCHASE A HOUSE**



Chart from Curtis Publishing Company's urban housing survey gives pertinent information on home building preferences. Survey carries valuable data on the gas appliance market

loan associations what the Federal Deposit Insurance Corporation was doing for banks. As of September 30, 1944, there were insured by F.S.L.I.C. 2,460 savings and loan associations, and there were 3,900,000 holders of insurance accounts aggregating \$4,000,000,000 in amount. The average amount per private investors is about \$1,000.

### The Federal Housing Administration

The second main constituent of the National Housing Agency is the Federal Housing Administration, created by the Congress in the National Housing Act of 1934. Its operations are under three basic titles.

Title I. The F.H.A. insures lending institutions against losses sustained on

advances made on personal notes, the proceeds of which are to be used for the modernization, repair or improvement of real estate. The bulk of these loans has been for the improvement of single-family dwellings. The average size of prewar loans was in the neighborhood of \$400, and the average term was 30 months. Approximately 3,300 lending institutions have been participating in this insurance, which has covered about 2,450,000 loans adding up to about \$1,000,000,000 under the present pattern of operations. About \$160,000,000 in such loans are estimated to be outstanding.

Title II. Under this title, F.H.A. has administered its most important peace-time program—the insurance of loans on home or rental housing mortgages

against loss of principal. As of June 30, 1944, there were outstanding \$3,120,000,000 in insured home mortgage loans and just below one hundred million dollars in rental project loans under this title. All Title II operations have involved more than 1,000,000 homes and approximately forty thousand family units in rental projects.

In 1939, the Federal Housing Administration insurance covered 23 percent of the total mortgage lending activity of that year on one- to four-family non-farm residences, and in 1942, about 30 percent. Single-family homes have comprised 99 percent of all newly constructed homes insured, and 93 percent of existing homes. In general, the emphasis has been put on new construction and on owner-occupied homes. The bulk of the homes financed are in the \$3,000 to \$6,000 value range, the median valuation including land being between \$5,000 and \$6,000. On new home loans, approximately 95 percent of the borrowers have been in the \$5,000 or below income group, the average income being about \$2,500. The Title II insurance program is self-sustaining.

Title III. This title provides for the creation and supervision of large national mortgage associations, in order to provide a ready secondary market for sound mortgage loans against which the associations would issue their debentures in the open market. Only one such corporation has been created, the Federal National Mortgage Association, which is owned, operated and staffed by the R.F.C.

### Federal Public Housing Authority

To clear slums and to provide decent housing facilities for families of low income, the Congress in 1937, passed the United States Housing Act. This act defines the activities of the third main constituent unit of the National Housing Agency—The Federal Public Housing Authority, formerly the United States Housing Authority.

In broad outline, this act authorizes financial assistance to local housing authorities in two forms: First, loans up to 90 percent of the development cost of locally owned slum-clearance and low-rent housing projects, which loans are repayable in full with interest at the

going Federal rate, plus one-half of 1 percent; and second, annual contributions or subsidies, which, of course, are not repayable, for the purpose of reducing rents to the level which low-income families can afford to pay. Local communities are required to make annual contributions in the form of tax exemptions or otherwise amounting to at least 20 percent of the Federal annual contributions.

### Government Housing Funds

Thus far, Congress has authorized \$800,000,000 in loans, and has authorized annual contributions to be contracted for in an amount calling for payments not to exceed \$28,000,000 per year. Substantially, the entire authorizations have been executed, and it is expected that they will provide a program of about 194,000 family dwelling units. Three hundred and thirty-eight low-rent housing projects, providing 105,532 family dwelling units, are already under development and management by local housing authorities in 164 localities in 31 states, the District of Columbia, Puerto Rico, and Hawaii. In addition, 182 projects, involving 25,513 dwelling units, have been suspended because of the war, in most cases prior to construction. Another 247 projects, providing sixty-three thousand units, are now being used for war purposes and will revert to low-rent status when the war is over.<sup>3</sup>

On August 1, 1945, Senators Wagner and Ellender introduced Bill S. 1342 in the Senate, which will be known as the "General Housing Act of 1945." This Bill calls for over 1,000,000 new homes a year for the first ten years after the war. Private enterprise is to be encour-

<sup>3</sup> Blandford, N.H.A., *Post-War Economic Policy and Planning*.

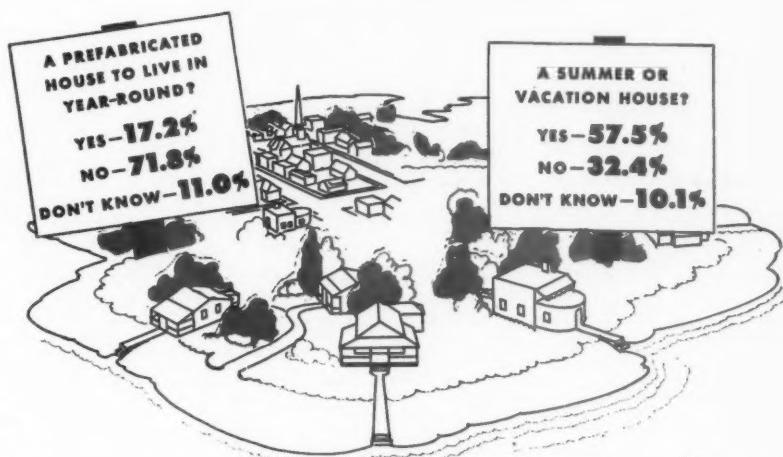
### F. H. A. Restores Loans for Home Building

EASY credit terms on home building came back to the nation on August 25, according to an Associated Press dispatch. On that date the Federal Housing Administration announced that it was returning to its prewar program of insuring mortgages on homes. Ten thousand banks and other private institutions stand ready to lend money with F.H.A. backing.

**HAVE PEOPLE HEARD OF,  
READ ABOUT, OR SEEN PREFABRICATED HOUSES?**



**WOULD THOSE WHO HAVE SUCH  
KNOWLEDGE CONSIDER BUYING**



Trend of people's thinking about types of houses is reflected in the Curtis survey chart. The survey was based on complete interviews with 4,007 separate families located in 35 states

aged and stimulated to do the job wherever it can do it, especially in the redevelopment of slums and blighted areas.

The Bill also extends the program to include rural housing. Private home builders feel that they can handle the situation, both from the building and financing standpoints. The opportunities awaiting them are graphically illustrated in an accompanying chart.

This General Housing Act of 1945, if passed by Congress when it convenes in October, will give permanent status to the present Government housing set-up; so no change in its policies need be contemplated. With this picture of the housing program it behooves every gas utility to keep in the closest possible touch with local architects and builders.

These high goals for postwar housing mean even more than satisfying the

housing needs of the occupants. They mean more jobs and mortgage lending, more home building and real estate transactions. They also mean a tremendous market for gas appliances and equipment.

### Bankers to Finance Home Appliances

NATION-WIDE financing installment buying of household appliances is being planned by leading banks, according to *Printers' Ink*. The plan is to be put in operation 60 days after the war's end, and key banks will aid smaller banks in their territories to participate. Recently, at Syracuse, the following six leading banks of New York state met to discuss details of the plan: Bank of Manhattan, New York City; Syracuse Trust Co.; Lincoln-Rochester Bank & Trust Co.; Manufacturers and Traders Trust Co., Buffalo; First Bank & Trust Co., Utica, and County Trust Co., White Plains.

# Developments in Diaphragm Dressings

**Reports of comparative tests  
on the relative effectiveness  
of a number of new materials  
used for gas meter diaphragms**

Written discussion of the following article will be welcome for subsequent publication in the MONTHLY. Such discussion should be signed and should be submitted not later than the end of this month. It will be referred to the author for comment and published in November issue.

BY LYMAN M. VAN DER PYL  
and

MARY HELEN WERDER

Pittsburgh Equitable Meter Company

DRESSINGS for the diaphragms of gas meters vary considerably in composition, but in general there is one point of similarity. This point is that nearly every one contains a semi-solid material, such as petrolatum or degas, or a drying oil, such as cod oil or rape-seed oil, to increase the viscosity of the dressing, initially or after a short drying period, respectively. The increased viscosity tends to retard the thinning of the dressing by vapors of light oil or of gasoline, as found in manufactured and natural gases, and slows down the dripping of oil from the leather.

Since the drying oils would become too stiff unless plasticized, and since petrolatum and degas are too stiff by themselves at low temperatures, liquid oils are also a component part of diaphragm dressings. Many such oils have been used and suggested, but the principal ones are mineral oil, neatsfoot oil, sperm oil and castor oil.

In recent years, a number of new diaphragm dressings have been proposed, but no data on the relative effectiveness of the new materials have

been available. However, comparative tests have now been made and are reported herewith.

The various oils included in the tests were

1. A mineral oil-petrolatum mixture in the ratio of 10 gallons of 200 second viscosity neutral oil to 45 pounds of petrolatum. This is a widely used mixture, which may be considered as a reference standard.

2. Viscous Oil, of the Standard Oil Company of California. This is an inherently viscous oil of mineral origin, of such a nature that it requires no stiffening agent. Its solubility characteristics are similar to those of the usual mineral oils.

3. L-666, a gasoline-insoluble oil. See A. G. A. Proceedings (1932) page 1015.

4. No. 200 and No. 500 Fluid Silicones of the Dow-Corning Corporation. Basically these are organic liquids containing combined silicon, and they maintain their viscosities with changes in temperature to a far better degree than any of the other oils used for diaphragm dressings. The No. 500 Silicone had a viscosity of 50 centistokes (228 seconds Saybolt viscosity) at 25° C, while the No. 200 Silicone had a viscosity of 1000 centistokes (4550 seconds Saybolt Viscosity) at the same temperature. They are both soluble in heptane and benzol.

Twelve samples of rechrome-tanned

sheepskin were impregnated by immersion in each of the different dressings. After draining, they were all exposed to an air temperature of 125° to 140° F for a period of 12 hours, to allow any excess of dressing to drip off. The oil absorbed was nearly the same for all dressings, varying between 107 and 119% of the original weight of the leather, except in the case of the L-666 dressing, the absorption figure for which was 128%.

Part of the oiled samples were exposed to a flow of natural gas saturated with benzene, and the remainder were exposed to natural gas saturated with heptane. The flow of gas was continued in each case until the dressing had ceased dripping from the leather, which required a period of two weeks of continuous flow.

The results of the tests are given in the table on the following page as average percentage loss of each type of dressing, based on the original weight of dressing.

It should be noted that the two series of tests are not comparable since they were not run at the same time, but one after the other, and the room temperature was somewhat higher while the heptane test was running. Temperature differences will affect the vapor pressure of

Presented by  
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Chairman

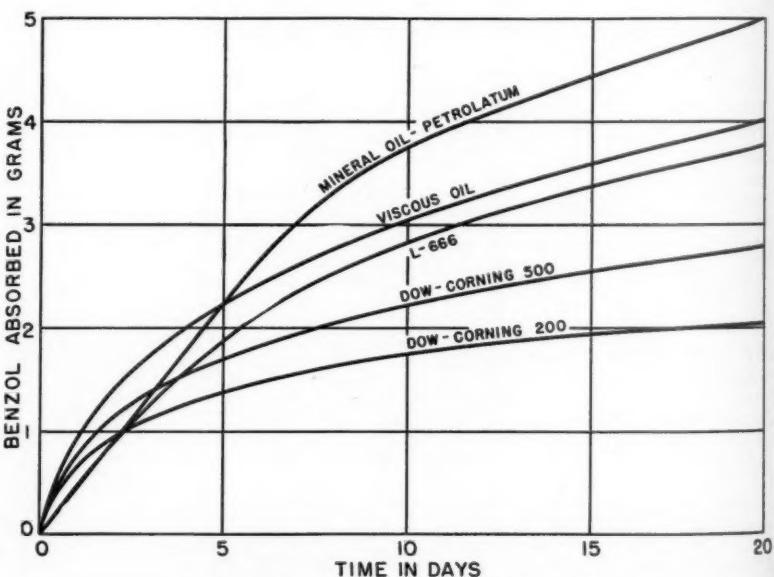


Figure 1. Results of absorption test for benzol

solvents and consequently the vapor content of the gas. Temperature changes also will affect the absorption of the solvent by the dressing. However, each series is consistent within itself.

The shape of the samples did not permit tests for gas tightness to be made, but experience has shown that a content of dressing of slightly more than 50% based on the weight of unoiled leather, will render the leather porous at a pressure of 4 inches of water, and with this content, the dressing is close to the minimum permissible for proper lubrication. On this basis, all of the samples are satisfactory in the benzol test, while in the heptane tests, only the Dow-Corning Silicones and the L-666 dressing are satisfactory. However, exactness in these tests is not possible, and after a series of saturated and unsaturated service in meters, the results would be different in degree from the figures given here, and

*Percentage Loss of Dressing From Samples Exposed 2 Weeks to Natural Gas Saturated with Benzol or Heptane*

Dressing	Benzol Test	Heptane Test
Mineral oil-petrolatum	46.3	59.5
Dow-Corning No. 200	32.0	44.0
Dow-Corning No. 500	33.5	45.1
L-666	39.0	21.4
Viscous Oil	40.1	57.0

all, with the possible exception of the L-666 oil in the heptane test, would be practically replaced by the solvents in the gas.

Samples of these dressings were also subjected to an absorption test similar to that described by Bunte and Wittig.<sup>1</sup> Three milliliters of each oil were weighed into weighing bottles of similar dimensions, so that the volume of dressing and the exposed surface were the same in each case. The weighing bottles were placed unstoppered in a desiccator containing a layer of benzol in the lower compartment. From time to time, they were stoppered, removed from the desiccator, and reweighed to determine the rate of absorbed benzol. A similar test was run subsequently using heptane instead of benzol.

The results are shown in Figures 1 and 2. It is interesting to note that the relative standing of each dressing is the

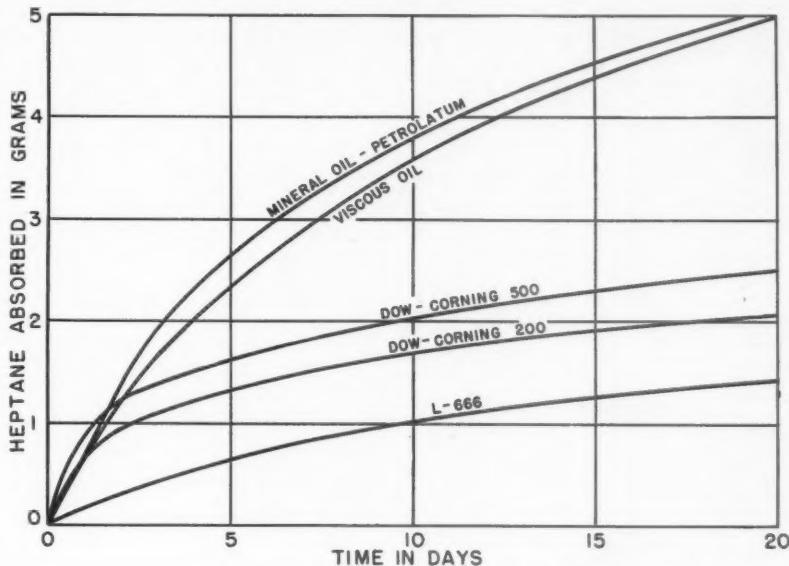


Figure 2. Results of absorption test for heptane

same in the bleaching test as in the absorption test, and except for the L-666 dressing, the dressings stand in the same order in both the benzol and the heptane tests. The improved position of the L-666 dressing in the heptane test is due without doubt to its insolubility in that solvent.

The lower figures for the Dow-Corning Silicones are possibly due to the fact that silicon has been substituted for some of the carbon atoms in the molecule. This is a very expensive operation and the expense for use as a diaphragm dressing is probably greater than is warranted by the better performance. However if silicon, or some other element, could be incorporated in the molecule of an organic compound by a less costly method, it might result in a more practical solvent-resistant dressing, possibly more so than would result from a rearranging of carbon atoms in an organic molecule.

### Government Lifts War Restrictions

AS of August 21, the war's end had brought the following revocations of governmental restrictions:

R09-A, Stove Rationing, August 15

L-79, Plumbing and Heating Equipment, August 16

U-7, Natural Gas, August 18

L-23-B, Domestic Electric Ranges, August 20

L-23-C, Domestic Cooking Appliances and Domestic Heating Stoves, August 20

L-42, Plumbing and Heating Simplification, Schedule 4, Cast Iron, Soil Pipe, and Fittings, August 20

M-9, Copper, August 20

L-5-C, Domestic Mechanical Refrigerators, August 20

Directive 75 to CMP Reg. 1, Freeze Order on Sheet and Strip Steel, August 20

Also one hundred and ninety-one additional W.P.B. limitation and conservation orders on August 20

### Chemical to Locate Submerged Line Breaks

THE chemical compound, fluorescein, used by airmen forced down at sea to color the surface water around their rubber rafts and mark their locations, also played an important part, according to *Science Service*, in locating leaks in the pipe lines laid under the English Channel from England to France to supply Allies in Normandy with gasoline and oil.

### Maximum Pipeline Use Urged for Natural Gas

THE board of directors of the Independent Natural Gas Association of America took action on June 29 designed to procure for the royalty owners and producers of natural gas the widest possible market for their commodity.

In a resolution adopted by the board, it is stated that the I. N. G. A. will dedicate its principal efforts at this time to making possible the maximum use of the only means of transportation available to natural gas, namely, pipelines, "so that the royalty owners and producers may obtain the widest possible market for their product and the States may carry out effective policies of conservation in respect to natural gas."

<sup>1</sup>Gas-und Wasserfach 20, 482-6, 506-11, 519-24 (1937). Abstract in A. G. A. Proceedings (1938) p. 618.

# Sales of Liquefied Petroleum Gases Up a Third in 1944

THE percentage rate of gain in annual sales of liquefied petroleum gases declined from 27 per cent in 1942 to 15 per cent in 1943, however it turned sharply upward in 1944 when comparative deliveries of 905,600,000 gallons were 34 per cent above the 1943 total of 675,233,000 gallons, according to a survey made by the Bureau of Mines, United States Department of the Interior and prepared by A. T. Coumbe, Petroleum Economics Division, Economics and Statistics Branch.

The 1944 survey was extended to cover material delivered for synthetic rubber components, and when this additional demand is included the 1944 quantity expands to 1,061,809,000 gallons—a total realized in spite of wartime regulations, equipment and transportation difficulties, and ever increasing diversions to satisfy the demand for aviation-grade motor fuel and possible because of greatly increased production of liquefied petroleum gases from both old and new plants.

Petroleum refineries, gasoline plants, and cycle plants cooperating in the 1944 survey reported 156,209,000 gallons of liquefied petroleum gases delivered for synthetic rubber components. Most of this material—144,370,000 gallons or 92 per cent—was indicated as butane or related gases, and all of it was reported for areas east of California. The above quantity of liquefied petroleum gases delivered for the manufacture of synthetic rubber is below the 1944 total released by the Petroleum Administration for War as estimated from its industry survey for the same areas—districts 1 to 4. The Bureau survey was based on actual deliveries; furthermore, reporting companies were asked to limit items to liquefied gases, whereas the industry survey covered material in a liquid as well as a gaseous state.

Omitting sales of material reported for synthetic rubber components so that 1943 and 1944 items will be on a comparative basis, all principal uses of liquefied petroleum gases showed greater percentage gains in 1944 than in 1943, except the demand for industrial fuel, which expanded at a lesser rate than in

1943, and "All other uses," which registered a loss in 1944. The percentage increases in 1944 were quite different from those in 1943, when the demand for industrial fuel showed a larger gain and other principal uses smaller rates of expansion than in 1942.

Sales of liquefied petroleum gases for domestic use increased by 29 per cent from 339,380,000 gallons in 1943 to 438,552,000 in 1944. The important gain in 1944 indicates that the downward trend in the annual expansion rate (65 per cent gain in 1941, 36 per cent in 1942 and 13 per cent in 1943) has been arrested and that distributors are finding ways to overcome appliance and transportation difficulties in order to market a growing production. Manufactured-gas companies are using an ever larger amount of liquefied petroleum gases for direct distribution or for stand-by gas, and they increased their purchases by 27 per cent from 37,519,000 gallons in 1943 to 47,768,000 in 1944. Deliveries of liquefied petroleum gases for industrial fuel rose from 149,429,000 gallons in 1943 to 163,036,000 in 1944—a 9-per cent gain in contrast to a 31-per cent expansion in 1943 over 1942. The lower rate of increase in 1944 reflects equipment and transportation difficulties and also the diversion of butane for other purposes.

A greatly stepped-up use of liquefied petroleum gases as raw material for chemical manufacturing is indicated in sales of 151,985,000 gallons for this purpose in 1944—a quantity nearly triple the 1943 demand of 55,356,000 gallons. Part of this growth reflects expansion under war conditions, however some of it is due to more complete reporting of this demand in 1944 than in 1943. Liquefied petroleum gases delivered for internal-combustion-engine fuel increased from 87,834,000 gallons in 1943 to 101,760,000 in 1944—a 16-per cent gain compared with a 7-per cent increment in 1943 over 1942.

## Gas Industry Overseas

(*The Gas World*, London, July 21, 1945)

FROM July 1, Paris was without gas throughout the night because of the coal position, which remains serious. The Paris Gas Company states that coal supplies are down to three days. After September the canals in the north freeze over and transport will then become more difficult. To assure regular supply of gas during the winter months the company must have a reserve of 60,000 tons, and it will be impossible to accumulate this unless there is a sudden turn in production.

The most serious aspect of the new restriction is the cutting of supplies to some 700 bakers in the Paris region. The Prefecture has assured them, however, they will receive oil supplies to allow them to work. Many factories will have to stop their night shifts.

One hopeful spot is the possible use of rich coal from the Sarre Basin, which is highly suitable for the production of gas. Before the war the Sarre produced between 45,000 and 50,000 tons of coal a day, but at

the beginning of March of this year production was down to 15,000 tons, and since then it has dropped to 5,000 tons.

When the Minister of Finance, Monsieur Plevien, was in the United States he discussed the whole question, and it was decided that French engineers should work the mines under the direction of the Americans. The coal was to be distributed between the French, the Americans and the German population.

**Switzerland**—Here, the gas position is even worse. In Geneva, a method has been invented whereby old paper is pressed into 16-lb. blocks which are mixed with other fuel. Some 200 lb. of paper produce 60 cubic metres of gas, but as normal consumption for Geneva is about 25 million cubic metres per year this new device is not expected to alleviate the position very much. Supplements to the ration have been extended to sick people and those over 65 years of age. These supplements range from 2 cubic metres per month to 10 cubic metres.

**Sweden**—The gas position continues very serious. German coal is no longer delivered and gas consumption has had to be cut by 30 per cent. Regulations for the coming winter have already been introduced. Temperatures in apartments and offices must not exceed 13°.

## Dreamers

● There are two kinds of dreamers: those who envision great things and do them, and those who enjoy dreaming so well they are content to do no more.

—Selected

TABLE 1.—SALES OF LIQUEFIED PETROLEUM GASES IN THE UNITED STATES, 1938-44  
(THOUSANDS OF GALLONS)

Year	Butane	Propane	Butane-propane mixtures	Pentane	Quantity	Total Percentage increase over previous year
1938 . . . . .	52,768	54,130	56,050	2,253	165,201	16.8
1939 . . . . .	71,351	79,323	69,020	3,886	223,580	35.3
1940 . . . . .	77,056	109,216	123,348	3,836	313,456	40.2
1941 . . . . .	112,244	126,969	219,252	4,387	462,852	47.7
1942 . . . . .	128,560	150,511	301,917	4,452	585,440	26.5
1943 . . . . .	140,122	218,273	312,683	4,155	675,233	15.3
1944 <sup>1, 2</sup> . . . . .	277,240	335,377	449,192	4	1,061,809	57.3
1944 <sup>1, 3</sup> . . . . .	132,870	323,848	448,882	4	905,600	34.1

<sup>1</sup> Subject to revision. <sup>2</sup> Includes material delivered for synthetic rubber components. <sup>3</sup> Material delivered for synthetic rubber components omitted to compare with 1943 totals. \* Figures not available.

# Mobilizing for the Industrial Market

Demonstrated wartime technical ingenuity in industrial gas applications must be matched by peacetime merchandising program of unprecedented effectiveness



**Frank H. Adams** In the back country near La-Jolla, California, there was a sign on a little boarded up refreshment stand which read "Closed for the Duration—Hope to Open Tomorrow." Now that "opening day" is here I do not question our ability to meet and overcome through cooperative effort the problems of peace. Yankee ingenuity both on the battle fronts and the home fronts during the last three years should immediately dispel any thought of failure or of pessimism toward the position our industry will hold in the future. But, along with our ingenuity and great capacity to meet emergencies is a typical American business man's proneness to forget the costly lessons of previous experiences and to assume a sanguine attitude toward the exigencies of a new era.

## Lessons of the 1920's

There is no question that during the 1920s the gas industry passed through a very critical period. Those of you who were a part of utility management at that time will recall that the very life of the industry was jeopardized, yet in many respects the situation then may have its counterpart in what we may have to face in the future.

Just to recall a few points during that critical period operating costs were rising; a serious shortage of gas oil had developed; coal and oil prices were advancing; rates were at unprofitable levels; new capital was unattainable and public opinion was unfavorable. Do not some of these conditions seem familiar today?

May not what was done then form a sound background for what we must do

Originally prepared for presentation at the 1945 A. G. A. Conference on Industrial and Commercial Gas.

BY FRANK H. ADAMS

President, Surface Combustion Corp.,  
Toledo, Ohio

now? The "Action Program" formulated on May 26, 1920 by the Emergency Action Committee, under the astute leadership of George B. Cortelyou and Philip H. Gadsen, employed what are well recognized as the most effective peacetime tools—Merchandising and Salesmanship. These tools were applied to re-establish a healthy, progressive, profitable industry.

## "Action Program"

A Public Relations Bureau of Information began to function immediately. Through the Bureau, the gas industry's case for the abolition of candle power requirements, a reduction in required heating standards, a readjustment of rates (elastic enough to meet changing conditions and allow new capital to flow to the support of the industry) was placed before the mayors of 36 cities, and before the public through the newspapers of the cities served. Thirteen thousand editors and publishers learned about and told their public of the problems of our industry and the necessity of support. The public, the press and regulatory bodies slowly became convinced, so that by 1927 the fight was won.

Thus, the services which effected the lives, occupation and comforts of nearly every family in America won recognition. The industry regained its health. The problems, from management's viewpoint, may not have been considered either of a sales or a merchandising nature, but rather those of labor cost, material costs and procurement, rates, capital, heating standards, etc., but the Sales and Public Relations Departments were the instruments through which the objectives were reached.

Today what is the situation? The gas utility is firmly entrenched. Industry

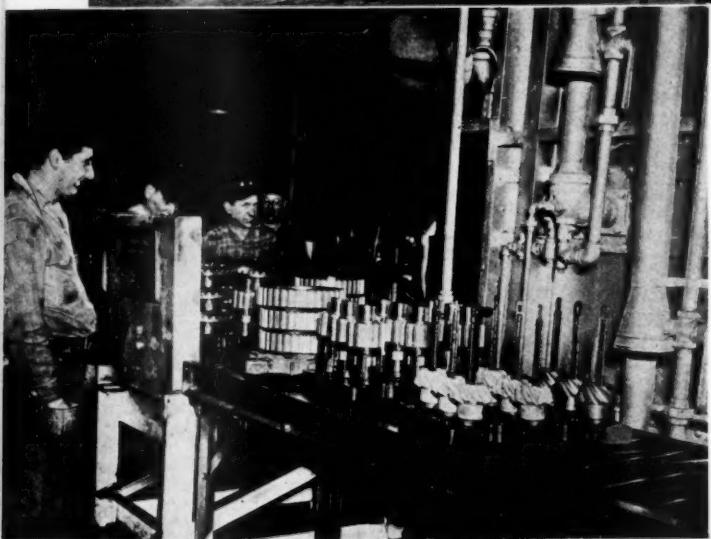
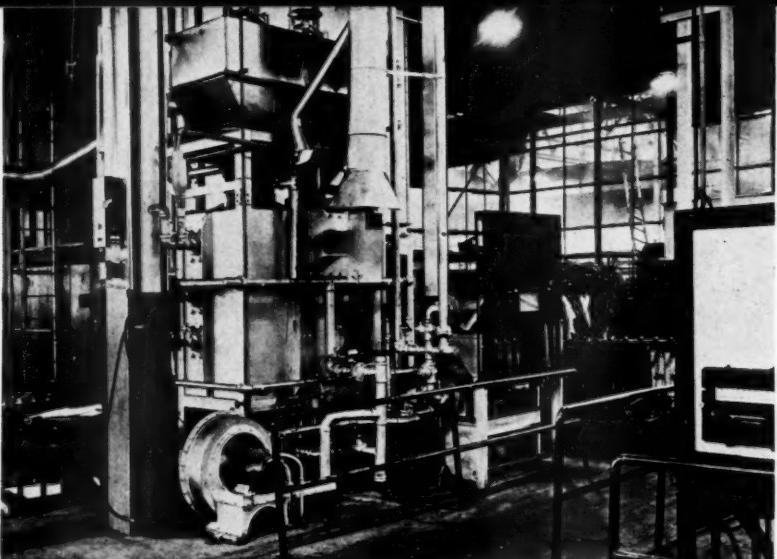
recognizes gas as the best heating medium. But this acceptance must be maintained—will have to be maintained—against strong competition from other fields, if the industry is to continue to expand or even to continue at or near its present level.

The problems of today are not exactly those of the early twenties. But the methods which must be utilized to assure our ability to meet the present and future problems remain the same and have been recognized by the industry. This is proved by the fact that extensive appropriations have been made for national advertising. Promotional committees have also been set up by the A. G. A. and the A.G.A.E.M.

Thus, I am not suggesting anything radical when I say that merchandising and salesmanship may well be applied in the solution of our future problems. Throughout the history of the gas industry, its leaders have turned toward the improvement of its sales and public relations programs when its progress was threatened or impaired by competition, by wars, depressions, or by just plain complacency. We have come far in our appreciation and recognition of the value of sales training, market research, sales-power, sales coverage, planned selling, advertising, merchandising and public relations.

## Merchandising Principles Applied

Our first recognition came at the turn of the century, about 1902, when we acknowledged the eventual loss of the lighting load to the electric industry and turned to the promotion of gas cooking to offset its effect. This was followed by a continuously progressive improvement as companies recognized that the principles of merchandising had to be applied to the gas business. Show rooms came off the side streets onto Main Street; sales training programs were established; home service departments were organized; cooperative national industrial gas advertising was instituted



in 1925, and so on. Through each new era we have found, sometimes belatedly, our industry turning to an improvement in its service and merchandise distribution techniques to maintain its position and attain a permanent profitable place among other industries.

It seems to me that this record is prophetic. It clearly indicates that *merchandising must be the major consideration of management*. For without management's recognition of the necessity of merchandising, New Business Departments cannot hope to meet successfully the strong, effective and scientific marketing methods which competition will surely use, in fact, is using today.

Some of you may be much concerned about new equipment, new processes and new applications of gas in the industrial field. Others may be wondering how the products of industrial research are going to meet the threat of induction heating, of electrically heated furnaces and perhaps other types of heating equipment. Neither those in competitive fields nor in our own can or will maintain a status quo, nor will any one of them attain an impregnable position against competition. My concern is not that our development and research departments will fail to meet the challenge that lies ahead, but rather that our marketing methods, our sales organizations and our advertising will prove adequate enough to fully exploit the markets which in the light of recent studies I know full well are open to us.

Credit is certainly due to the various planning committees for the establishment of formulae which could be applied by individual companies. All that any cooperative body, such as the American Gas Association, can do is to set up a basic plan and furnish ideas which with proper modifications, additions and developments will be made suitable for use by individual utilities. It is, and will be, up to individual companies to adapt any ideas which the A. G. A. sets up. Only they, for instance, can deter-

Wartime industrial gas technique will now pay peacetime dividends. (Top) Double-unit gas atmosphere generator used to prepare protective atmospheres for heat-treating furnaces—a unit employed in connection with radiant tubes which made possible many wartime achievements. (Center) Continuous-type pusher-tray radiant-tube furnace, a pioneer type in process of gas carburizing. (Bottom) Six radiant-tube heated bell-type gas carburizing furnaces, each of which can handle 2200 lbs. per charge of automotive gears

mine gas load factors and local conditions. Only they can apply the basic plan and ideas to their own individual problems.

Within the past few years you have all witnessed a growth in a competitive field which is clearly indicative of what kind of competition you may have in the postwar world. I am referring to the growth in the use of electricity for industrial purposes. This growth has not been just a matter of demand vs. shortage in other available sources of power. It has been the result of a carefully planned program which has been developed and followed by those involved in promoting more extended use of electrical service.

This automatically suggests the value to you of following any program which is set up at this time. I mention this simply to point out that success involves first the preparation of a suitable plan, but even more important is the fact that it be followed in the coming years.

### Manufacturers Keep Pace

In case you are wondering what equipment may be offered the gas industry in the future, one need only turn to the products and processes developed by Surface Combustion Corporation alone for a reassurance of the gas equipment manufacturer's ability to keep pace with demands and to continually provide the products through which gas can best interpret its outstanding service. This is an obligation and a necessity of our company because our sincerity and progress depends primarily upon our ability to interpret the *gas equipment needs of the industrial, commercial and residential markets*, and to interpret those needs into gas burning equipment of the character which we can most economically produce and distribute within the framework of our facilities. Our success depends upon how well we meet this obligation. That it is being met is evidenced in the almost uncountable applications of gas-fired heat-treating furnaces to the production of war material.

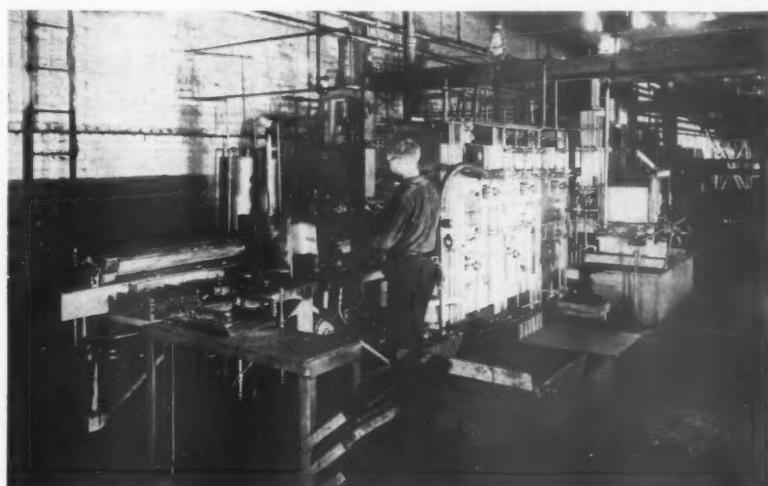
What may be termed a new science has been evolved during this war. Following initial discoveries and experimental work prior to the war, a science of gas chemistry in the heat treatment not only of irons and steels, but of other metals, has reached entirely new heights of acceptance and progress.

Basically this science attacks many of the problems involved in fabricating and heating treating metals by eliminating the source or cause of those problems, rather than in treating symptoms, namely in processes and methods of overcoming faults of processing and fabrication, which in the past have increased costs, have produced failures in service, and generally made heat treatment far more difficult than is now necessary.

By the use of furnace atmospheres of various compositions, such old time treatments as cyaniding, quenching, carburizing, etc., have been placed on a

for the postwar period. Companies have not had the opportunity to utilize their research and development facilities for the preparation of this postwar market on the scale which it requires.

The accomplishments of these facilities in the war program can give us great confidence in their ability to produce but management and the gas industry are going to have the problem, the same as the majority of other industries, of maintaining their position by expert merchandising and organizing with the products which are a mixture of where we left off prior to the "call to arms" together with additions and



Tray-type pusher gas muffle furnace used for dry cyaniding miscellaneous small metal parts which will be extensively used in reconverted factories for peacetime production

far more precise and scientific basis in high production of war material than heretofore was possible.

When the forging of airplane propellers required temperatures around 2300° and the maintenance of a nitrogen atmosphere around the steel (well beyond the reach of the previously developed heat-resisting alloy gas-fired radiant tubes) means were devised for maintaining sufficient gas-tight refractories to preserve this atmosphere as well as the production of ingenious industrial size unit nitrogen generators.

It is a sobering thought when we realize that for the past 4 years American ingenuity and output of all the research and development facilities of this country have been governed entirely by the conditions required by war. It would be wrong to picture the products of these facilities as being equally valuable

improvements which can be adapted from the developments of the armament era. These products can be a very healthy forerunner of those which can be expected when the full, might and power of industry's facilities are turned toward the research and development of this postwar market.

The development of new things for postwar markets, today more than ever before creates an obligation for its use and distribution. And it seems to me that this is not alone a responsibility of the equipment manufacturers and their distributors and dealers, but should be spearheaded by the gas utility. The extent of utility participation will, of course, depend upon rates, markets and character of equipment application, as well as upon the individual company's facilities to eventually increase its send-out.

In every utility property, in this immediate postwar period, there certainly will occur a definite decline in the industrial load. Most plants that return to commercial production will no longer be consuming gas twenty-four hours a day. In some cases there will be a maximum cut-back of nearly 33½%, leaving a surplus of gas to be sold for other applications. We may have a condition during this reconversion period similar to the late twenties and early thirties. At that time, due to necessity, utilities began to develop good industrial sales departments. The conversion period may bring even greater complexity of problems and applications, making it advisable now to set up sales programs for industrial gas which can be applied immediately.

"But," you may say, "why is this true?" We have nearly as many men contacting industrial users as we had prior to the war, our relationship with industry is more intimate than it has ever been and gas has certainly demonstrated its advantages as an industrial fuel during this period of unprecedented production.

### War Practice Needs Revision

These advantages are recognized, but opposing them as weaknesses are our methods of distribution and application incurred prior to and as a result of the war, which appear to require correction. In war when production was first and cost was second, much effort was put into the problem of getting things done without taking time to analyze the cost involved, a situation which could not result profitably under normal conditions. The emphasis put onto the job by every wartime plant manager was on what equipment could be operated and how fast, what furnaces could be used, and, only incidentally, what could be saved. The type of equipment, whether electric or gas was immaterial.

Thus, during the war, the utility has gradually moved away from the merchandising of industrial equipment, leaving the selling and often the servicing, which customers consider essential, to the equipment manufacturer. While this has been accelerated by wartime conditions, the manufacturer cannot economically create or maintain a market for industrial gas. Furthermore, if the customer does not receive proper

selection, application, installation, adjustment and servicing of equipment, the reflection is upon GAS as a fuel—little upon the equipment.

Training to sell, yes, even selling is needed. In many properties for more than three years, selling effort has been replaced by attempts to curtail gas usage and to discourage customers in changing over to gas service. Compensation must be sufficient to attract high calibre industrial fuel sales-engineers, capable of analyzing the needs of his customers, applying equipment to improve production and lower costs. Coverage, both

personal and advertising, has been inadequate. Heat application surveys have been limited or non-existent.

Thus during the war we have had

1. Interest centered on production.
2. Adequate load available without selling.
3. In some cases added load discouraged.
4. Inadequate coverage. Heat application surveys limited or non-existent.

It is my considered opinion, and I believe I am voicing the opinion of most utility sales (*Continued on page 419*)

## A PLAN FOR POSTWAR USES OF GAS IN INDUSTRY

### 1. Heat Application Surveys

To determine industry's reconversion plans and estimated needs, thus helping to prevent a rapid decline in utility revenue and the creation of an unfavorable load factor.

### 2. New Processes, New Applications, New Equipment Data

To help extend industrial service. Knowledge by personnel of individual utility of industrial practices and anticipated developments in immediate future required. (See text item regarding adequate training of personnel.)

### 3. Excess Capacity

Getting information from item No. 1 above and other sources to obtain knowledge of excess capacity, then developing a specific plan to utilize it profitably.

### 4. Maintaining Market

Develop adequate sales coverage to maintain the market for gas, and provide a more practical relationship between sales and revenue.

Involves contacts between suitable personnel of individual utility with industrial men in control of purchases of equipment using gas. (See text item regarding training.)

### 5. Compensation of Personnel

Provide sufficient compensation necessary to attract type of men who will be a credit to gas utility in contacts with industrial gas users, including sales engineers and salesmen.

### 6. Technical and Sales Training

(a) Sales Engineers—Retrain existing men and train new personnel along lines of technical information essential to sell in postwar markets, as outlined previously.

Training in basic subject, plus providing information relating to specific equipment of various equipment makers, is required.

(b) Training of salesmen required, but not as elaborate and specialized as that for sales engineers.

### 7. Advertising

More complete, more convincing, more specialized and more frequent advertising coverage of present and potential gas users.

Utilize surveys noted in item No. 1, plus available data from other sources to suggest subjects to be covered and emphasis to be placed when and where needed.

# Accidents Don't Just Happen

**Responsibility of trade associations in carrying on an organized safety program to prevent needless loss of men and money**

BY NED H. DEARBORN

President, National Safety Council

FOR the privilege of reckless driving, reckless working, and reckless living, we Americans pay to the tune of five billion dollars a year. This five billion dollars is not some abstract sum of money added to the national debt. Most of it is ready cash paid out as a result of accidents by the members of our trade associations and by their customers. Some of the five billion represents production and earnings blocked by accidents.

This waste of money is almost entirely needless!

## Cost of Accidents

The cost of accidents cannot be measured in terms of dollars and cents, of course. There was no adequate way to measure losses in war production—losses that meant the extension of the war, increased casualty lists, and the prolongation of the separations and anxieties that hit every American family. We do know that accidental injuries and deaths on and off the job alone deprive us each year of the equivalent of a whole year's production more than 1,000,000 workers. The cost involved in these accidents is \$3,200,000,000.

This sabotage of industrial effort is almost entirely needless!

Every human value suffers from accidents. The pain to the victim is only a beginning. The mental anguish of families of those hurt and killed is probably greater. You must add to these the distress and anxiety among the co-workers and friends of the victims. You must add, too, the self-searching, self-torturing attitude of employers, managers, supervisors, all of whom must read their accident reports with deep misgivings, with a repetition of the question, "Have I done everything that I could do to prevent accidents?"

Reprinted from ATAE News Supplement.

This mental and physical suffering is almost entirely needless!

There is another loss without a price tag—the loss of human life. It is sufficient to say that from Pearl Harbor Day to January 1, 1945, more Americans died in accidents than had been killed or reported missing on all our battle fronts. Almost half the home front dead were workers.

This waste of human life is almost entirely needless!

The prevention of accidents is an activity which must involve the participation of all types of public and private organizations. It is a concern of government and of industry, of labor and of agriculture, of the teachers and the housewives, of international bodies and local community groups.

Inevitably, a large share of the job of preventing accidents falls to the trade associations of our country. Overworked association executives may groan when they hear that, but it is certainly true.

There are several reasons for this. First of all, the interests of the members of trade associations are directly affected by accidents. This is equally true of their short-term and their long-term interests.

## Association's Responsibility

In the short term, association members, as employers, pay a very large share of the total accident cost. In insurance, in damaged property, in lost production and in increased labor turnover, association members pay heavily.

In the long term, the relations of the members with their employees, with the public, and with government are directly affected by their accident records. An aggressive, energetic campaign for safety on the part of management is a clear demonstration of management's acceptance of social responsibility.

"But" it may be argued, "the trade association cannot take part in all the campaigns in which its members' inter-

ests are involved. The functions of an association are inevitably limited. Why should safety become an association responsibility?"

There are several reasons why the trade associations are in a peculiarly strong position to deal with this problem. Let's consider a few of them:

1. Safety is a universal problem. It affects manufacturing, transportation, distribution. I dare say there is no branch of any trade or industry which is not affected. Thus it concerns all the members of an association, not just a few.

2. Safety is non-competitive. There is no place for jealousy, for "trade secrets," for a struggle for the benefit of one firm over another. All firms with

plants making sheet metal products have somewhat similar safety problems. So do all laundries, and all garages. Only through a trade as-

sociation can there be one common interest—the reduction of accidents. The fullest type of cooperation, of experience-sharing, of mutual aid can be expected, and it is in precisely this type of relationship that the trade association operates most effectively.

3. Safety problems within an industry or trade tend to be similar. All accumulated the maximum knowledge of the specialized hazards of the trade as studied by the individual managers and engineers of the individual establishments.

4. Safety is a public service activity, and the trade association usually is better equipped to convey to the public information on such activities than is the individual firm.

5. Accident prevention is a problem in which business firms must cooperate with other agencies. Workers killed in traffic accidents or in homes are just as definitely lost to the factory or store as the workers killed on the job. Management must concern itself with safety outside the establishment, and it must work with other interested agencies to promote safety. This cooperation can be most effective if centralized and channeled through the trade association.

6. Accident prevention work can be an association builder. We've been talk-

ing about what the association can do for its members by stressing safety. But there is another side of the matter—what such safety activities can do for the association.

Now, there may be some associations in which everything is sweetness and light, in which all the members love one another dearly, and in which the association executives need not worry about internal friction. There may be—but I don't know their addresses.

Typically, a trade association is like a team of husky, rather fractious horses. In general, they pull together, and when they do, they are a mighty power. But a lot of energy is wasted in rearing, in snapping at each other, in none too playful kicks in the ribs.

Any conscientious association executive is looking for ways to bring his members together in harmony—to teach, by ever-repeated experience, the simple lesson that cooperation pays. Accident prevention activities supply one of the best examples of the way in which the trade can pull together in amicable unity.

#### What the Association Can Do

The starting point of a safety campaign on the part of the trade association is, logically, the association bulletin. A straight-forward, hard-hitting presentation of the accident situation in the field should be the opening gun—and there will be no harm done if the

article really jolts some of the more complacent brethren.

The safety theme, too, should be brought into committee meetings and membership meetings. Are the boys worried about postwar markets? Some facts and figures on the dent accidents make in the customers' pocketbooks will be worth quoting. Are they concerned with the technical aspects of some new processes? Any discussion of such a subject is incomplete without consideration of the safety problems. Are there personnel problems before the house? Unsafe working conditions can be a sore spot of serious proportions—and the elimination of work accidents, on the other hand, can provide a means for labor-management cooperation that will pay off in both increased efficiency and better working relations all around.

The association should, in time, develop its own accident prevention committee, which gives continuing attention to the problem, and organizes association-wide activities to lift the safety consciousness of the members, their employees, and the public.

This committee also should represent the association in larger safety organizations dealing with the community, state and national problems.

#### Sources of Help

The trade association which enters the accident prevention field does not have to stand alone. It becomes a part of a

larger, nation-wide movement. The central, unifying organization of the safety movement is the National Safety Council. The Council—with a membership of industrial and transportation and insurance firms, local, state and national government bodies, schools, colleges, civic organizations and other agencies, as well as individuals provides educational and informational services of many kinds. It holds an annual National Safety Congress for the exchange of experiences and knowledge gained.

Affiliated with the National Safety Council are 67 chartered local community safety councils, providing a similar service on a local basis. The trade association will find both national and community safety councils interested in the special problems of the association's members. Posters, bulletins, pamphlets and such special items as driver dash cards can be obtained. In many cases the National Safety Council can undertake to aid in the preparation of special safety articles for trade association bulletins. In specialized fields, various industrial bodies, engineering associations, insurance companies and government agencies are ready and willing to provide safety information and assistance.

#### The Future of Safety

The story of organized safety activities has closely paralleled the story of the rise of American (*Continued on page 420*)

## The Tyranny of Temperature

● Despite his elaborate internal temperature-control mechanism, optimum temperature and humidity ranges exist for man, varying somewhat with activity and the type of clothing worn. For light work indoors, it appears that temperatures of from 65 to 70 deg. F. and relative humidities of about 60 per cent at the lower temperature and 40 per cent at the higher give the greatest feeling of comfort and the best conditions for efficiency. When sleeping, somewhat lower temperatures are preferable provided some form of covering is used to maintain a temperature of about 80 deg. F. next to the skin.

The temperature-regulating mechanisms of the body are sufficiently flexible, however, so that in completely dry air indoors, human beings can tolerate temperatures up to 112 deg. when nude and up to 138 deg. when clothed. Clothing protects the body not only against cold, but also against heat, as desert dwellers have long known. As the humidity at high temperature rises and perspiration evaporates more slowly, clothing becomes increasingly valuable. In saturated air at 88 deg. F., the clothed body is unable to prevent its internal temperature from rising above normal, and a genuine fever results. For a nude body, the corresponding limit is about 92 deg. F.

At low temperatures the limit of toleration is vaguer, since it is greatly affected by clothing and physical activity; but when the air inside the clothing becomes too cool, just as when it becomes too warm, the body is so fully

employed in the task of keeping its internal temperature constant that there is little surplus of energy for any other activity.

Much effort has gone into the gathering of objective data by which the general level of civilization in various areas may be judged, and while it is easy to overestimate the effect of a given variable, it does seem that a good climate is an important aid, although not a guarantee, for a low average death rate, low infant mortality and high per capita income. For example, tests of general culture have shown Washington, Oregon, California, New York, Connecticut and Massachusetts high on the list. Indeed, it has been suggested that development of heating means facilitated the spread of civilization to northern Europe in the Middle Ages. Similarly, modern air conditioning helps to mitigate the situation of the tropics.—*Industrial Bulletin of Arthur D. Little*.

# Standards for New Freedom Kitchens

Gas industry sponsors nationwide project to effect standardized dimensions for equipment, thus simplifying the design and building of good functional kitchens



Appliance and storage units made to standard measurements may be combined in attractive kitchens. Note two-unit gas range which may be installed side by side or separately

THE postwar period will usher in an easier way to better kitchens for homemakers as a result of a nation-wide project sponsored by the gas industry to effect standardized dimensions of equipment for the New Freedom Gas Kitchen.

Formerly there had been little dimensional coordination in the equipment of various suppliers, and the assembling of the units for a finished kitchen presented many difficulties in the way of securing smooth streamlining.

To eliminate these difficulties and to simplify the planning and building of better kitchens in new homes or old, the American Gas Association secured the interest of the steel and wood cabinet industry and of gas appliance manufacturers in working out unification of dimensions so that cabinets and cabinet-sinks might be built in sizes to fit smoothly with gas ranges and refrigerators in practically all kitchens. By virtue of the measurements agreed upon,

each unit can be placed in relation to its most convenient use to obtain good functional kitchen design.

The measurements are:

Depth of counter top	25 $\frac{1}{4}$ in.
Depth of base cabinets	24 $\frac{3}{4}$ in.
Height of base cabinets	36 in.
Depth of toe cove	3 in.
Height of toe cove	4 in.
Height of back rail	4 in.
Thickness of back rail and counter top	1 $\frac{1}{2}$ in.
Widths of base and top cabinets in multiples of 3 up to 39 inches	12, 15, 18 inches

In the case of deluxe gas ranges in which a slightly greater depth than the 24 $\frac{3}{4}$  inch depth of base cabinets is preferable to provide a larger cooking surface and a deeper oven and independent broiler, the manufacturers of these ranges will curve the range front from the sides to eliminate abrupt protrusion from the edges of the cabinets and thus continue the streamline.

The added interest of related industries—glass, linoleum, paint, plastics—

covers remaining factors for the kitchen composed of equipment which matches in line and color.

The need of good kitchens in this country is great, some estimates running as high as 95 per cent of the families, according to H. Vinton Potter, American Gas Association director of the coordinated gas kitchen program. He points out that kitchen needs vary according to families and are limited by finances, and there are preferences in kitchen types and sizes as in everything else. Some families like the small cozy kitchen sparkling with color; others like best the slick forward-looking kitchen with considerable cabinet space in which to store large quantities of food-stuffs, utensils, china and glass. The new plan will cover all preferences, tastes, and also budgets.

## Achieve Custom-Built Effect

A broad segment of the 20 million families served by the gas industry and the families served by other fuels will find that package or unit kitchens are entirely adequate to their needs. By using these free-standing units, plus filler-strips where there is a gap, the same effect may be achieved as custom-built models costing twice as much. However, the industry's program will produce both the finest custom-built and the equally good package or unit type.

Many local gas utilities plan to set up a kitchen planning service to assist their customers in acquiring the best and most attractive kitchen each can afford. That may mean a kitchen equipped with every device from an automatic range to automatic dish-washer. Or it may mean a kitchen planned for the add-a-piece method of purchase, to be completed over a period of years.

Standard dimensions of kitchen equipment will simplify and reduce to a minimum the bewildering aspects of kitchen planning and will provide an important service to the local dealer, department store, and furniture store handling equipment; also the gas utility, the home-

maker or homeowner, as well as the architect and builder.

Several package kitchens such as A, B and C at specific prices probably will be available, but doubtless most kitchens will be planned with basic units which offer flexibility. These units will be especially adapted to limited space and will be useful as the starting point in assembling the equipment outlined for the kitchen as planned.

In instances where finances do not permit the complete kitchen, or a fully remodeled job at the beginning, a woman may have her kitchen planned and started with these basic units, adding

equipment correctly over a period of two or three years by following the program worked out for that purpose.

Since the FHA in most states will allow the inclusion of cabinets and appliances for the entire kitchen in the original mortgage, the majority of new homes will likely be complete, even to the finished kitchen, Mr. Potter believes.

Standardized dimensions in cabinets and appliances will not preclude any of the distinguishing features which have marked the products of various manufacturers in the past. For example, although the height of counter tops has been set at 36 inches, there will be several individual ways of providing a lower working surface for the needs of a woman of less than average stature. One cabinet manufacturer may provide a short counter surface that will drop down four to six inches between two adjacent base cabinets. If the area beneath this short counter is left open and furnished with a chair, it becomes a desk, or a place where some work may be done seated. Another manufacturer may have some cabinets with a pullout shelf four to six inches beneath the regular top—convenient for a meat grinder.

A few base cabinets may be the 32-inch height to use in one section of a kitchen for a lower work area apart from the usual 36-inch height cabinets. The simplest solution may be a roll-about table 32 inches high which can be used for food preparation at any point in the room.

### Basic Work Centers

Standardized equipment can be utilized to assemble the three basic work centers in any of the prevailing workable kitchen arrangements—the straight line, the L-shaped, the corridor type and the U-shaped.

A dining feature is certain to be included in the average kitchen, whether it is only a breakfast bar, a nook, an alcove, or a small room off the kitchen. Planning services will offer suggestions for the many details which add up to charm—color scheme, floor coverings, bright counter surfaces, picture windows, curtains, plants and flowers to transform cold efficiency into the colorful, homely type of workroom many homemakers prefer.

Proper ventilation will be important in the postwar kitchen for several reasons: homes will be smaller; a trend

toward warm air heating will increase, with its resultant recirculation of air from room to room; better insulation will offer less natural infiltration of air—with cooking odors having a disposition to linger longer; and with pastel colors in draperies and furnishings predominating, a cleaner atmosphere than that to which we have been accustomed will be a requisite.

Mr. Potter points out that any range, regardless of the fuel used, which is capable of bringing a liquid to the boiling point will distill off greasy vapors into the atmosphere and will disseminate cooking odors throughout the house. These must be captured at their source by a ventilator designed for the purpose and so installed that it will surround the range with a blanket of air and remove such odors and vapors at once, yet moving only a small volume of air.

The gas industry has several experimental ventilating installations in use and at the American Gas Association Testing Laboratories, Cleveland, Ohio, fundamental research in kitchen ventilation is making it possible for manufacturers to produce the kind of equipment needed. Eventually several types of ventilating systems will be in use.

### Warriors' Greeting



"WELCOME HOME"—What magic is in those words for our returning servicemen and women. On entering New York Harbor evidences of this welcome are seen all along the waterfront, climaxed by this huge red-white-and-blue sign on the Consolidated Edison Company's gas holder opposite the 1100-foot piers where the Queen Mary and Queen Elizabeth dock. The sign is 48 feet high.

## Kitchens for Living

● In the planning for postwar homes it appears that kitchens are returning to the position they held a century and more ago. Architects, contractors and home builders are emphasizing the kitchen as the heart of the home. A few years ago the tendency was to make the kitchen small, compact and efficient. The new trend is to continue the scientific arrangement of stove, sink, working surfaces and refrigerator. But this will be only one phase of a kitchen's usefulness in the future. The other phase is to make the kitchen into a daytime living room as well.

As with most forms of architecture, especially homes, the functional aspects of building are determined by living needs and climatic conditions. Two present-day economic factors are determining influences in the trend to enlarge the kitchen and eliminate the dining room. Home builders believe that domestic help will be so expensive after the war that the housewife will do most of her own work. With the assistance of outside services for laundry, house cleaning at periodic intervals and the possibilities for using quick-freeze foods and even quick-frozen meals purchased as a unit, the housewife will want a home that is constructed for efficiency in living.

The other economic factor is the cost of house building. During the years of the building boom immediately after the war, labor, lumber and other materials will be relatively high. The dining room is usually the most expensive room in the house in terms of hours of service. A large kitchen with space for a table or a dining nook will serve the family's purposes most of the time. Surveys have shown that many women prefer a larger, longer living room.—Editorial in *New York Times*, Aug. 11.

# Why Not Convert to LP Gas?

A discussion of small manufactured gas plant problems and the economic advantages of converting to liquefied petroleum gas

This is the final installment of a two-part article discussing the economics of converting to LP gas. Part I appeared in the July-August issue of the MONTHLY and discussed the distribution system monthly and discussed the distribution system before and after conversion and the effects of conversion on the system. Part II discusses various types of LP gas and one conversion procedure.

## PART II

### Selecting the Type of LP Gas



Paul E. Peacock, Jr.  
out the country.

One condition common to all types except undiluted propane is the changing B.t.u. value of the finished gas brought about by changing temperatures. This change is evened out to an extent by high pressure storage tanks or surge tanks mixing all gas made before it reaches the mains. However, the Gasair system is a venturi mixer rather than mechanical and the changing B.t.u. has presented a more serious problem.

The author was one of the first engineers to accept the fact that changing temperatures of the vapor or air caused the varying B.t.u. of the finished gas. Installation of four plants in Alabama with tempering coils to correct for the changing temperatures has proved the author's contention in this respect, and recording B.t.u. instruments along with recording thermometers have demonstrated the condition.

It was realized it was not practical to attempt to maintain control over the air temperature, since the air temperature changed with the weather and from day to night. The most logical approach

BY PAUL E. PEACOCK, JR.

*Martinsburg Gas and Heating Co.,  
Martinsburg, W. Va.*

then was to bring the vapor temperature to that of the air before the two were mixed. This was accomplished by installing suitable tempering coils in the vapor line before it reached the mixing assembly. After going through the tempering coil the vapor temperature was the same as that of the room, and this air was the air being mixed with the vapor. Under varying conditions the vapor temperature may be raised or lowered to meet the air temperature, but by having both at the same temperature at the time of mixing the relative B.t.u. remains constant.

For support of this theory that changing temperatures account for fluctuations in the B.t.u. of the finished gas, we have but to apply some simple factors:

Let us assume:

B.t.u. value of propane vapor at 60°—  
2520 B.t.u. per cu.ft.

B.t.u. value of finished gas to be—  
550 B.t.u. per cu.ft.

Under this condition the finished gas will have:

218 cu.ft. of vapor at 60° per thousand cu.ft.

782 cu.ft. of air at 60° per thousand cu.ft.

Now the air temperature increases to 95° because of weather conditions and the vapor temperature (being controlled by the heat exchanger and other equipment) remains the same. With this condition we have:

782 cu.ft. of air x .9369 (temperature correction factor), or 733 cu.ft. of air which is still being mixed with 218 cu.ft. of vapor. This then gives us a vapor-air ratio of 218/733 instead of the original ratio of 218/782.

This increased ratio of the vapor to the air raises the B.t.u. of the finished gas to 578 instead of the original 550. The same condition will exist inversely with a lowering of the air temperature.

Temperature variations in the vapor will account for some change in B.t.u. values, but since the percentage of the vapor is not so high or the change of temperature so great it does not present much of a problem.

With some of the later plants the B.t.u. of the finished gas has been raised to around 900 B.t.u., but this does not eliminate the change in B.t.u. The raising of the B.t.u. just reduces the percentage of change in respect to the total B.t.u. If we apply the same correction factors in the order we did above we will see that under the same conditions with 900 B.t.u. gas we will get a B.t.u. value of 938 when the air temperature raises to 95°.

As pointed out regarding the Alabama plants, it is possible to correct for this fluctuating of B.t.u. value by installation of a simple tempering coil on the vapor line; however, very few plants have as yet installed such coils.

Now that we have discussed the one condition which must be considered with some plants and corrected for, let us examine the individual types of LP gas.



Butane-air gas plant at Pocomoke City, Maryland. Installed in 1931, it serves approximately 600 customers. This picture illustrates the beauty and cleanliness possible with an LP gas plant



An undiluted propane plant at Snow Hill, Maryland, installed in 1931 by the author. The plant served as a nucleus for building up a thriving bottled gas business

### Butane-Air

This type was the earliest of the LP-gas systems and many are in use today. Various types of equipment were used for mixing the vapor with air and included the Kemp machine, Selas machine, Cutler-Hammer mixing control, Fisher proportioning valves, fixed orifices and others. The Kemp machine and Selas machine could be used as a booster for mixing direct into the mains or could be used as a mixing unit ahead of a compressor. This latter arrangement is most commonly used, and all gas is made into a high pressure storage tank and supplied to the distribution mains through regulators.

Most of the first butane-air plants had only one compressor and one mixing unit and depended entirely on electricity to operate the plant. In case of a breakdown of the one unit or in case of power failure a gas failure was threatened. Later plants have installed two or more compressors and mixing units and have gas or gasoline engines for operation of the plant as well as electric motors. This arrangement is quite an improvement over the original installations.

With the passing of years many other uses have developed for butane liquid and it has become difficult at times to secure an adequate supply. Because of this factor, very few new butane-air plants are being planned. Some of the older butane-air plants have already changed to propane-air or undiluted propane and others will likely change as equipment becomes available.

With butane, it is necessary to repressurize the liquid storage tank in winter months in most sections due to pressure loss from temperature conditions.

Some plants installed automatic repressure regulators where the condition was more serious. The butane will become a constant liquid at about 14° above zero and at temperatures just above this will not deliver sufficient vapor by natural vaporization to take care of a mixing unit of normal size.

With bottled gas becoming so popular, owners of butane-air plants have found themselves unable to take advantage of this new income with above ground tanks and compete on an even basis with other bottled gas dealers who distribute propane. This statement has held true with all but the far southern properties who use butane for bottled gas with a measure of success. Some properties have attempted to use butane in summer months and then buy propane from another company for winter months as a bottled gas. This has not proven satisfactory because cylinders delivered during the summer will last some customers to the middle of winter and will give trouble the last month or so.

The latest arrangement of butane-air properties is to specify a butane-propane mixture according to the average temperature of their locality. This mixture has helped considerably in many properties, both from the repressure angle and also from the bottled gas business angle.

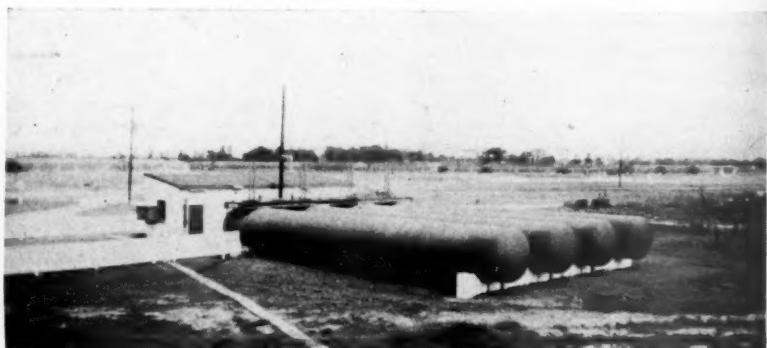
### Propane-Air

This type of plant is almost identical to the butane-air plant and has become more popular as butane has become difficult to obtain. Propane has operated quite satisfactorily, but in some plants trouble was encountered in winter months because no vaporizing equipment was installed with the plant. It was felt by many engineers that the atmospheric heat would provide sufficient heat to vaporize the propane all year. In one such plant in Iowa it was necessary to heat the liquid storage tank one severe winter to keep the plant operating. The next spring a vaporizer was installed and has been used much of the time since.

Because of the lower boiling point of propane and its higher pressure at normal temperatures it is not necessary to repressurize the liquid storage tank in winter months as with butane.

With propane, the operators have been able to go after the bottled gas business in earnest and many of them have built up such a good bottled gas business the distribution property has fallen to second place in income importance.

Some maintenance of plant equipment will be encountered with propane-air as with butane-air and there will be the condition of power failure as with electrically operated butane-air plants.



Undiluted propane plant serving a government housing project at Copeland Park, Newport News, Virginia. This plant serves 5000 homes all of which have gas ranges and water heaters

The changing B.t.u. values will be to a lesser degree with propane-air than with butane-air.

### Gasair

The Gasair unit is the latest type of plant to be recommended and has many advantages to offer. This system uses propane and its natural pressure as a mixing agent. Use is made of the velocity of the vapor going through a venturi at relatively high pressure to draw in a controlled amount of air for the desired B.t.u. of the mixed gas.

This type of plant usually mixes di-

of the holder water in some localities, however, in winter months and it may be necessary to install circulating pumps for the water or a heating boiler for heating the holder water in extreme weather.

### Undiluted Propane

This type of gas has come to the fore in the past few years and is now being accepted by many who at first objected to it because of certain reasons they felt important. It was the author's good fortune to install one of the early undiluted propane plants and systems

waiting until the leakage is about to bankrupt the property owner.

## ONE CONVERSION PROCEDURE

### Distribution System

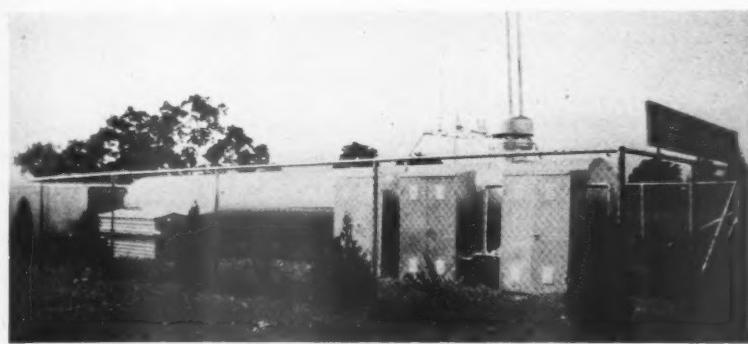
Before attempting a conversion survey you should have a thorough knowledge of your distribution system and an accurate set of maps and records. Every valve, drip, riser or other device in the system should be located and tested by actual operation to see that it is in good operating order. When this part of the preliminary survey is finished you are ready for the next step.

1. *Map of System:* After you have the city map showing the distribution system with all its appurtenances, trace it off on a plain sheet of paper so the traced map shows only the distribution system without any of the streets or other markings which appear on the original city map. This map will give you a perfect picture of your system and will enable you to plan the sectionalizing of the distribution system.

2. *Sectionalizing:* The object of sectionalizing is to isolate a small section of the system from the rest by closing certain valves. For conversion purposes the size of the section should be governed by the number of customers or appliances rather than the blocks of mains. Besides being very necessary in most conversions, the sectionalizing is a great help in leakage survey work.

Start at the farthest point from the gas plant and determine what lines may be isolated with existing valves. If necessary, install new valves or a short extension to reduce the size of the section. At one valve location of each section you should tap the main on each side of the valve and run a riser to the surface at the curb line. These risers will be used in leakage survey work for metering gas to that particular section after all valves to the section have been closed and the gas passed through the meter.

In leakage survey work, the metering of gas to any section should be done late at night when there is no normal load. Readings on the meter test hand should be taken with a stop watch every fifteen minutes and these readings recorded. The lowest reading will give you the approximate leakage after deducting estimated consumption of pilot



Undiluted propane plant at Berlin, Maryland, which serves approximately 400 customers. The town was originally served by a butane-air plant installed in 1931 at Ocean City

rectly into the distribution system and handles the changing load conditions by several units set to cut in and out as load requirements demand. Because the usual operation is directly into the distribution mains, temperature changes as described at the start of Part II affect this type of operation. In a few plants of this type a compressor and high pressure storage tanks have been installed to take care of low off-peak periods by feeding such periods out of the high pressure tanks through regulators.

For the Gasair type of installation it is recommended that a surge or storage tank be installed or used to take care of periods when it is necessary to remove or repair the mixing equipment or other plant apparatus and lines. Some manufactured gas plants may find it advantageous to continue using the low pressure lift storage holder in which to mix. This will even out any fluctuations in B.t.u. values and will also give a standby supply at all times. A control on the holder would cut the mixing unit on and off as the holder raised and lowered. There would be the problem

in the country and since then the owners have converted at least two of their butane-air systems to undiluted propane. No better proof should be needed of the advantages of propane over the liquefied gases than that owners with both types have converted to undiluted propane. The one company in mind started with the one undiluted propane plant as a nucleus and has since built up one of the better bottled gas businesses in the country. Today, the distribution systems of that company are just incidental operations to the bottled gas business.

One of the most frequent objections heard to undiluted propane is that the leakage would be so serious with the higher B.t.u. value of the gas. This is true if you are of the old school of gas men who sit around and do nothing about your leakage until it gets above 10%. On the other hand, if you are of the late school of thought which is, "any gas leak is too much," then you will not worry about leakage with propane. Modern operators get after any leakage and repair the leak without

lights, etc. The readings should be kept for comparison with future readings so you can tell whether the leakage in that section is on the increase or decrease.

As the first section farthest from the plant has been isolated you add another section to the first by working towards the plant. This procedure is continued until all but the last few blocks around the plant have been isolated from the plant. This same sectionalizing procedure can be applied to sections being supplied from governors on high pressure loops which feed into the low pressure system. In this procedure you convert the high pressure loop first with it cut off from the low pressure system and then add section by section of the low pressure to the converted sections.

(This section of converting the distribution system is written with the thought the conversion will be to undiluted propane. If that is not the type of gas you plan to use you will have to use the high pressure loop system of conversion or divide the distribution system as best you can from the gas plant location.)

## Appliances

Before you can convert the appliances in your gas system *You Must First Know What Appliances You Have To Convert.* The job of listing those ap-

## Magazines

One of the most popular mediums employed to tell employees about the company and its problems is the employee magazine, according to a survey of over 500 companies conducted by the Policyholders Service Bureau of the Metropolitan Life Insurance Company. The methods and media used to build better employee relations and an alert, loyal personnel are reviewed in the Bureau's recently issued report, "Telling Employees About Their Company."

Included among the media used as special employee magazine inserts, pamphlets and leaflets, letters to employees, interim reports on operation, charts and posters, illustrations, newspaper statements, courses for employees and employee meetings and contests.

A copy of "Telling Employees About Their Company" is available to those executives who address the Bureau on their business stationery. Address: Policyholders Service Bureau, Metropolitan Life Insurance Co., 1 Madison Avenue, New York 10, N. Y.

pliances is not to be dealt with lightly and no stone should be left unturned to list every appliance connected to your lines.

1. *Appliance Survey:* For the appliance survey you will need cards printed to list each customer and the appliances he has installed. The survey card should have spaces for such things as the customer's name, address, meter number, telephone number and such other information as local conditions may indicate. Besides this information, you will need a space for each appliance so you may show the type, serial number, kind of control and a space for remarks as to the type of conversion recommended, i.e., whether a new burner or conversion of the old burner. Some of the survey cards should be red for use with hospitals and other emergency installations which should be converted first.

2. *Utilizing Survey Card:* The completed survey cards should be analyzed by a competent person and arrangements made to order the conversion material. The type and kind of material ordered for each job should be listed on the back of the card in appropriate spaces so the conversion man will know just what material he is to use on the conversion of each appliance.

On refrigerators, as on some other appliances, it will be necessary to order new burners. It will be more economical to replace such small appliances as bunsen burners, cigar lighters, etc., than to attempt to convert them.

3. *Ordering Conversion Material:* Some engineers recommend buying all conversion material from the maker of the appliance while others recommend buying from companies that specialize in conversion supplies. A combination of the two works very well, and if you do not have an experienced person ordering the material it would be recommended that much of the material be secured from the manufacturer of the appliance.

All material should be ordered in such a way as to identify it with a particular job and when it is received it should be assembled with other material for the same job and kept together. Material for each section should be assembled together so it may be readily available when needed.

## Turning in of Gas

1. *Temporary Gas Supply:* If the conversion is to be to undiluted propane a temporary gas supply should be arranged for. A temporary set-up should be made along the first section to be converted. This is usually done by a battery of 100 pound (or larger) cylinders set up along the section and the gas fed into the section at a drip riser or other suitable connection. It should be kept in mind that the liquid will refrigerate as the gas is drawn off and sufficient tank surface will have to be provided to take care of the gas load. If sufficient tank surface is not provided the liquid will refrigerate to the point it will not vaporize sufficiently fast to take care of the gas load.

2. *Notification:* The date each section is to be converted should be determined and ample notice given each consumer as to the date and the hour of the conversion. Complete instructions should be given to each customer as to what they should do at the time of conversion, and especially those with automatic appliances. All automatic appliances such as water heaters and refrigerators should be cut off and left off until they are converted. Range ovens should not be used and top burners used only if adjustable by regulating the flame at the burner valve handle.

3. *Order of Conversion:* Before the actual turning in of the gas the conversion men should have in their hands the cards and supplies of the customers whose appliances will be converted first. These will be the red cards, then the refrigerators and automatic appliances and then the balance. If the conversion section is not too large the red cards and refrigerators should be completed the first night of conversion.

4. *Purging the Section:* As the hour set for turning in the new gas draws near, men should be placed over the section at strategic points to purge the section of all old gas. At the appointed time all of the men should purge the gas by burning after valves to the sections have been closed to isolate it from the balance of the system. As the valves are closed, the new gas can be turned into the lines. The flames at the point of purging will denote by their appearance when the old gas is purged and new gas reaches that particular point. A thorough purging job will eliminate

a lot of call-back service work after conversion due to pockets of the old gas remaining in the system.

**5. Appliance Conversion:** Conversion of automatic appliances may be started several hours before the actual turning in of the new gas and then the appliances left off until the gas is turned in. This will speed up the conversion of those automatic appliances as only an adjustment will be necessary after the gas has been turned into the mains and the old gas purged. No adjustment of appliances should be attempted until the section is thoroughly purged. As the work progresses call backs will be received due to pockets of the old gas remaining in the lines and at least one man should be kept available for these calls. While these calls may be annoying, they will not be serious. As the first section is converted, a few days should elapse before starting the next section so as to get all call back adjustments taken care of and everything in order.

**6. Final Section:** Under the sectional

system of converting you will finish all sections and have left only that section around the manufactured gas plant. This final section should be arranged so as to have used most of the old gas at the time of conversion. As this last section has been converted all holders should be emptied and thoroughly purged with steam to remove an explosive hazard. All larger underground lines could be flooded with water as a safety precaution. Disposition of plant equipment will be decided according to local conditions.

### Conclusion

You who have never worked with liquefied petroleum, and especially undiluted propane, will have a most pleasant surprise after the conversion is completed and the few problems overcome and you can appreciate real liquefied petroleum gas service. The uniformity and cleanliness of the gas will add much to improve your customer relations and public acceptance of Gas—The Modern Fuel.

the thousands of meals it turns out daily for the Naval Air Transport Service.

W. L. Maxson, president of the W. L. Maxson Corp., confidently expects a tremendous expansion of the business immediately following the war. The method seems to be the ideal solution to the problem of feeding people aboard airplanes and trains and wherever else cooking space is limited or time an important consideration.

To what extent women will turn to prepared meals to save the labor of marketing and cooking remains to be seen, but Mr. Maxson thinks his idea will prove a boon to busy women even if they buy his blueplates only occasionally. He says he believes it will be possible to market the partially cooked, frozen food in the same price range as other frozen foods.

The food is prepared in rooms so clean they would arouse the envy of most housewives. Skilled workers in spotless coats and aprons work at glistening stainless steel tables. In the cooking and roasting rooms are batteries of modern gas appliances—heavy duty ranges, revolving meat roasting ovens and friicators. Two high pressure gas-fired boilers supply steam for the steam-jacketed kettles and for heating water. Rodney Sanford, Brooklyn Union industrial sales engineer, who advised the customer on his gas equipment needs, estimates that even now the company is using gas at the rate of 5,000,000 cubic feet a year.

The paper plates on which the food is placed after being precooked are treated to prevent them from absorbing the food juices. After a plate is filled a paper cover is clamped over the top, the plate is placed in a rack, and rushed to the quickfreezing chamber. The meal is kept frozen until it is to go into an oven for the final minutes of cooking. The method is said to provide finished meals with each food retaining its individual flavor.—*Brooklyn Union Gas News*.

## Complete Dinner Prepared in 15 Minutes In New Food Preparation System

**I**N our postwar homes, it now appears, we can provide the family with a delicious, well balanced, hot meal in 15 minutes. And we don't mean out of a can."

This announcement in newspapers a few weeks ago was exciting news to women who were finding it increasingly difficult to turn out nutritionally balanced meals regardless of the time and effort they put into the task.

A good meal in 15 minutes! That exceeded their fondest dreams. It just couldn't be true.

Yet there were the facts. Someone had worked out a method of precooking the food, making up attractive blueplates, and quick-freezing the entire meal. All the housewife had to do was pop the paper blueplate into an oven for 15 minutes and the meal was ready to serve. It actually was being done for the Navy's Air Transport Service!

A plate might consist of a nice juicy steak, luscious green peas and French fried potatoes. Or veal cutlet, carrots and home fried potatoes. For dessert there could be mince pie, steaming hot, fresh out of the oven.

The company which developed this method of preparing quick meals has its big, spotlessly clean "kitchen" the territory of The

Brooklyn Union Gas Company—at 97-13 218th Street, Queens Village. Moreover, as might be expected, it uses gas in preparing



Tender, juicy steaks are quickly seared before being placed alongside peas and French-fried potatoes on the blueplate. Naturally, a gas range does the searing.

## Working Statistical Committee Named

AS a further step in the program to strengthen the statistical services of the American Gas Association, a working Statistical Subcommittee has been appointed under the chairmanship of Harry A. Weitzman of the Rochester Gas and Electric Corp., Rochester, N. Y. This subcommittee will work closely with the Statistical Bureau of the Association with the objective of presenting more accurate and comprehensive statistical information on the gas utility industry. It will make recommendations to the main Committee on Development and Use of Gas Industry Statistics to which it reports.

In addition to Chairman Weitzman, the membership includes:

Allan A. Cullman, Columbia Gas & Electric Corporation, New York, N. Y.; Arthur Gartner, Consolidated Natural Gas Company, New York, N. Y.; H. D. Grothusen, Gas Advisers Incorporated, New York, N. Y.; S. S. Mason, Washington Gas Light Company, Washington, D. C.; Harry I. Miller, Wisconsin Public Service Corporation, Oshkosh, Wisconsin; W. N. Lewis, Electric Bond & Share Company, New York, N. Y. and Irvin Dunston, American Gas Association, New York, N. Y., secretary.

First meeting of the subcommittee was held July 23 in New York City. A second meeting will take place August 27.

## Memorial Resolution to John W. Batten

THE Executive Board of the American Gas Association at its July meeting passed a resolution commemorating the outstanding character and contributions to the gas industry of the late John W. Batten. After reviewing his 40-year career in the gas industry during which he rose from chief chemist of the Detroit City Gas Co. to the presidency of Michigan Consolidated Gas Co., the resolution continues:

"He gave freely of his time and experience in all matters pertaining to the interests of the gas industry. He took a deep personal interest in the Michigan Gas Association, of which he was president in 1921, and in the American Gas Association, of which he was a director since 1938. He was chairman of the American Gas Association Committee on Industrial Research, which performed a most important work in developing the extensive research program now being carried on.

"Aside from all these constructive contributions to the industry to which he devoted his entire life, we who knew him so well had a still greater appreciation of his personal character and those human qualities which endeared him to all his friends and associates. Integrity was synonymous with his name, and whenever the name of John W. Batten is mentioned, it will always be with affection and respect. You could depend on him for honesty and fairness in every thought and action. He was a likeable and simple

man, with no affectation, and very considerate in all his relations with his fellows.

"It is given to few men to leave much behind them when they walk alone into the sunset, but occasionally a man travels life's road whose character is so fine and whose life is so complete, that he leaves memories behind him which will always be an inspiration to those who follow. Such a man was John W. Batten."

## Bastian-Morley Co. Personnel Changes

RECENT additions to the executive staff of Bastian-Morley Co., manufacturer of Crane water heaters and boilers, have been announced by J. P. Morley, president.

Ed J. Carey has been appointed vice-president and general manager and Ray J. Rodier is now vice-president in charge of manufacturing. Mr. Carey has been with the company 23 years, the past 13 as west coast manager. Mr. Rodier was formerly assistant to the president, having general direction of production, purchasing, inspection, personnel and engineering.

Other changes include: promotion of James V. Irvin to assistant to the president; return of Laurence T. Tegler from the Army to become chief engineer; appointment of Paul H. Mortimer and Frank H. Stockhausen, the former as assistant to Mr. Rodier and the latter as a plastics engineer.

plain—in Tambov, Gorky, Kalinin and other regions, as well as in the Tartar republic. Latest discoveries have included a number of very promising geological structures, and the reports of the experts indicate the likelihood of these containing natural gas and oil that will lead to important developments in the entire gas industry of the Soviet.

In yet another area, the Surkhan district around the great oil centre of Baku, there has been a marked stepping up in the production of what is known as "white oil." It is claimed for this oil, which is in appearance like pure petrol, that it can be used for cars in the form in which it is first produced. At one time it was thought that the country's reserves of "white oil" had been exhausted, but during the war years new deposits have been discovered, and in that period twice as much oil has been recovered than was found in the preceding twenty years.—*The Gas World*, London, June 30, 1945.

## Utility Sets Up Fund For Veterans' Children

ESTABLISHMENT of a fund to provide scholarships and other financial assistance for higher education to the children of employees who lose their lives in line of duty with the company has been announced by E. M. Borger, president of The Peoples Natural Gas Company, Pittsburgh, Pa.

The fund has been established by The Consolidated Natural Gas Company, of which Peoples is a subsidiary, and is known as The Consolidated Natural Gas System Educational Foundation. Bankers Trust Company, New York, is trustee with a committee of five employees from the subsidiary companies as administrators. Funds are provided by Peoples and four other subsidiary companies.

The foundation will provide for instruction in colleges or universities, business schools, vocational or trade schools, professional schools, and other private or public institutions of learning other than public or private grade or high schools or college preparatory schools. Financial assistance includes tuition, books, fees, other like expenses and normal living expenses.

## Russia's Gas Supplies

A NEW source for supplying Moscow with gas may possibly have been discovered by leading research workers of the Soviet Union. A geological conference held recently at the University of Moscow discussed details connected with prospecting for natural gas in the central districts of the Union around the capital. Over 100 scientists, mining experts, mining engineers and geologists have taken part in the discussions, and informative facts were disclosed regarding geological prospecting.

Such a program has been carried out on a wide expanse of country across the Russian

## New A. G. A. Ad

REPRODUCED on the inside front cover of this issue is the latest New Freedom Gas Kitchen advertisement that will appear in September, October and November issues of eight magazines with more than 18,394,000 circulation. The schedule is: Sept. 22 Saturday Evening Post (3,370,000 copies); October issue of House & Garden (204,000), House Beautiful (270,000), Ladies' Home Journal (4,200,000), McCall's (3,500,000), Parents' Magazine (700,000), True Story (2,150,000); and Nov. 26 Life (4,000,000).

## Gild Meeting Discusses German Gas Operations

AN informal round-up of the Gild of Ancient Suppliers August 17 heard Bernard V. Pfeiffer, manager of gas operations of the United Gas Improvement Co., Philadelphia, Pa., report "off-the-record" on what he learned of German gas plant operations during a three-month tour of that country.

The dinner gathering followed a meeting of the Gild's Great Council at the Meridian Club, Philadelphia, with 21 Suppliers and Burghers attending. Mr. Pfeiffer, commissioned a provisional colonel in the Army for the trip, spoke for two hours. With several other industrial investigators, he toured Germany and reported to the technical industrial intelligence committee on what the Nazis ac-

complished in the gas industry that might prove helpful in this country.

The Great Council voted to hold a meeting in New York at the time of the American Gas Association convention October 24th. A nominating committee, to present a slate of officers for the coming year, includes: K. C. Tomlinson, American Meter Co., San Francisco, California, chairman; David S. Sharpe, Geo. D. Roper Corp., Atlanta, Georgia; Stephen D. Day, Barrett Co., Houston, Texas; G. D. Yeatton, Hardwick Stove Co., Boston, Mass.; and J. H. Moore, *Gas Age*, New York, N. Y.

## Nashville Gas Utility Changes Hands

CONTROL of Nashville Gas and Heating Company was transferred on July 18, 1945 from The United Gas Improvement Company of Philadelphia, to Tennessee Natural Gas Lines, Inc., Nashville, Tennessee. The sale of all the common stock of the Company was made with the approval of the Securities and Exchange Commission.

Wade Thompson is president of Tennessee Natural Gas Lines, Inc. L. B. Richards will remain as president of Nashville Gas and Heating Company, which position he has held since the beginning of the year, when he replaced Samuel E. Linton, who retired after 29 years with Nashville Gas and Heating Company, and 46 years with subsidiary companies of U. G. I.

New officers elected at the time of transfer were Thomas W. Goodloe, financial vice-president; Wm. C. Terry, secretary-treasurer; and A. E. Hanson, assistant secretary. Mr. Terry was previously assistant secretary and office manager, and Mr. Hanson was in charge of general accounting for the company.

As soon as conditions permit, it is planned to convert Nashville from manufactured gas to natural gas, obtaining a supply from the 24" pipe line of the Tennessee Gas and Transmission Company, which passes within 17 miles of the City.

## Coke and By-Products in 1944

IN 1944 the coke industry with increased by-product-coking capacity surpassed all earlier production records, supplying coke and by-products vitally needed for war and other essential industries. According to the Bureau of Mines, United States Department of the Interior, the combined production of by-product and beehive coke reached 74,037,817 net tons in 1944, an increase of 3 percent over 1943. The ultimate increase of 3 per cent represented in the record output was registered from a 5 per cent increase in production of by-product coke and a proportionate decrease of 12 per cent in the output of beehive coke, resulting generally from the expansion of by-product coke-making facilities.

Requirements of coke paralleled the output and calculated consumption for all uses in the United States increased 2 per cent over 1943 and amounted to 72,971,401 tons.

## Standard Oil Enlarges Research Program

PLANS for two major petroleum research centers, construction of which will be started as quickly as steel and other materials are made available and to be completed late in 1946 or early 1947, were announced Aug. 22 by Eugene Holman, president Standard Oil Company (N. J.).

The new centers will be at Linden, N. J., and at Baton Rouge, La., at both of which places Standard Oil Development Company already has large laboratories. The expansion program ultimately may involve the expenditure of \$8,000,000.

R. P. Russell, president of Standard Oil Development Company, said the new laboratories would be used not only for developing improved products from oil and processes for producing them but in addition extensive work on extending sources of supply of oil products would be carried out. This latter work will include production of liquid hydrocarbons from natural gas, gasification of coal, oil from coal and production of oil from other carbonaceous deposits such as oil shale.

Basic studies will also be conducted on the application of catalytic processes to derive chemical raw materials from petroleum.

## Chemicals Made on Large Scale from Natural Gas

FIRST large-scale production of certain chemicals by a process using natural gases as raw material is announced by Celanese Corp. of America, at its large new plant near Bishop, Tex., the initial unit of which has just started operations. The principal chemicals manufactured—acetic acid, acetic anhydride, acetone, methanol, and formaldehyde—have been produced from petroleum raw materials in the past.

Acetic acid, acetic anhydride, and acetone are vitally necessary in the synthesis which produces the textile and plastic output of the company. Methanol, a widely used solvent, is utilized in the production of antifreeze, pharmaceuticals, cosmetics, inks, paints, and varnishes and many other commodities. Formaldehyde is used in the production of synthetic resins, for leather tanning and hardening, as a disinfectant, and in countless other applications.

A second unit of the chemical plant devoted exclusively in the manufacture of butadiene, main ingredient of Buna-S synthetic rubber, is about three-fourths completed.

## Helium Used as Tracer To Uncover Gas and Oil

HELIUM, the miracle gas, is playing a new role as "sleuth" in turning up heretofore unknown facts about underground migrations of oil and gas, which may be of untold value to the gas and petroleum industry, according to a recent report by the Bureau of Mines.

The report covered extensive experiments in the development of Naval Petroleum Reserve No. 1, Elk Hills, Kern county, California. The work is being done in cooperation with the Navy's Office of Naval Petroleum and Oil Shale Reserves.

The use of helium as a tracer gas involves injecting the inert gas into the underground oil and natural gas reservoirs through the well bores at one or more carefully selected locations and determining the presence of helium, if any, in the natural gas produced from adjacent wells.

By careful observation of the length of time required for the helium to travel from the injection well to adjacent producing wells and of the concentration of helium found in the producing wells, petroleum engineers and geologists will be able to chart with reasonable accuracy reservoir conditions between wells and determine the pattern of drainage of the gas and oil through the porous reservoir rock.

Reports by Bureau engineers on the first injections of helium in the Elk Hills reserve, during the past few weeks, disclose positive indication of the migration of helium to adjacent wells in the field. Additional amounts of helium are being injected into the underground reservoir and subsequent analyses of the output gas from the adjacent wells are

expected to implement subsurface data already obtained.

The Elk Hills project marks the first time that helium has been used as a tracer gas and in the initial test the helium content of the natural gas compressed for injection into the well bore was limited to 0.1 per cent. In the next test, the helium content of the injected gas will be reduced to about one-half this concentration. In later experiments various quantities of helium will be used to determine which concentration produced the best results. Probably one of the later tests will involve a short-time injection of pure helium to study the migration and diffusion of the concentrated gas.

In addition to producing the helium for the experiments, the Bureau of Mines, in charge of the Government's entire helium production program, also perfected a method for rapid, accurate gas analyses which takes only a fraction of the time formerly required for determining the helium content of the gas sampled from the producing wells.

Suggested several months ago by R. H. Cattell, Chief of the Bureau's Petroleum and Natural Gas Division, the use of helium as a tracer gas still is in its infancy in this important development of the petroleum and natural gas industry, but is expected to provide a long-sought tool for the study of subsurface reservoir conditions.

Because helium is chemically inert, it is uniquely valuable for this purpose in that its identity, readily determined by laboratory analysis, is not lost by combination with the reservoir rocks or fluids.

# New A. G. A. Members

## GAS COMPANIES

Bristol Gas Corp., Bristol, Tenn. (W. J. Harb)\*

## MANUFACTURER COMPANIES

Cory Glass Coffee Brewer Co., Chicago, Ill. (H. G. Blakeslee)

Duke Manufacturing Co., St. Louis, Mo. (M. P. Duke)

Friez Instrument Div.—Bendix Aviation Corp., Baltimore, Maryland (V. D. Hauck)

J. P. Glasby Mfg. Co., Inc., Bloomfield, N. J. (J. P. Glasby, Jr.)

Hi-Glo Radiant, Inc., New York, N. Y. (W. Kennedy)

Leeson Air Conditioning Corp., Detroit, Mich. (T. F. Leeson)

Ernest C. Lundt, Inc., Montclair, N. J. (E. C. Lundt)

Motor Wheel Corp.—Duo-Therm Div., Lansing, Mich. (D. F. Jones)

Specialties Appliance Corp., Chicago, Ill. (R. T. Keating)

## ASSOCIATE COMPANIES

Rumbold & Co., Inc., Atlanta, Georgia (A. H. Rumbold)

## INDIVIDUAL MEMBERS

Thomas H. Cate, Florida Power & Light Co., Miami, Florida

Ray L. Cooley, Jersey Central Power & Light Co., Asbury Park, N. J.

George Davies, Gt. Grimsby Gas Co., Grimsby, England

Walter C. Dayton, Walter C. Dayton & Associates, Inc., New York, N. Y.

De Vries, Regie Autonome des Petroles, Hte. Garonne, France

A. W. Flippin, Pacific Gas & Electric Co., Salinas, Calif.

H. S. Graham, W. T. Carmichael, Ltd., Auburn, Australia

Sydney G. Green, The Standard Meter Co., Ltd., Toronto, Canada

R. H. Gregory, Gregory's of Liverpool, Ltd., Liverpool, England

F. J. Hall, Michigan Consolidated Gas Co., Detroit, Mich.

\* Names in parentheses are Company Delegates of the American Gas Association.

E. R. Hughes, Jr., Southern Union Gas Co., El Paso, Texas

Leslie G. A. Leonard, The Dowson & Mason Gas Plant Co., Ltd., Manchester, England

J. M. Lynn, Jr., Lone Star Gas Co., Dallas, Texas

Philip R. Marvin, Milwaukee Gas Specialty Co., Milwaukee, Wis.

Daniel P. O'Brien, Citizens Gas & Coke Utility, Indianapolis, Ind.

William C. Oeckler, Gas Consumers Association, New York, N. Y.

Dorothy F. O'Meara, Bridgeport Gas Light Co., Bridgeport, Conn.

Don W. Richardson, Citizens Gas & Coke Utility, Indianapolis, Ind.

C. L. Ruff, Michigan Consolidated Gas Co., Detroit, Michigan

Clarence W. Russell, Citizens Gas & Coke Utility, Indianapolis, Ind.

R. A. Sims, Southern California Gas Co., Pasadena, Calif.

Hal Singleton, Grayson Heat Control, Ltd., Lynwood, Calif.

Ellis B. Sloan, Florida Power & Light Co., Miami, Florida

B. Z. Tabb, Bristol Gas Corp., Bristol, Tennessee

H. F. Tickle, Southern Union Gas Co., El Paso, Texas

Dr. F. E. Vandaveer, The East Ohio Gas Co., Cleveland, Ohio

J. L. White, Southern Union Gas Co., El Paso, Texas

## Mid-West Personnel Conference in Omaha

THE next meeting of the A. G. A. Mid-West Personnel Conference will be held September 27 at the Fontenelle Hotel, Omaha, Nebraska, according to an announcement by R. B. Harkins, chairman.

New and urgent problems arising from the sudden coming of peace will be discussed. Among the topics will be "super-seniority" for returning veterans and reversion to a 40-hour week.

Reservations may be made with the hotel or through G. C. Pardee, Metropolitan Utilities District or Joe T. Innis, Northern Natural Gas Co., both in Omaha.

## Mid-West Gas School and Conference

THE Mid-West Gas Association has announced continuance of its former annual Gas School and Conference and the twenty-second meeting will be held at Ames, Iowa, October 22-24 in conjunction with the Engineering Extension Service of Iowa State College.

The customary exhibition of gas equipment used by distribution and production departments will not be held because space is limited by the U. S. Navy training program at the college. It is planned to hold general

meetings of one-half day for each committee, as follows:

Monday morning, Oct. 22—General meeting; Monday afternoon, Oct. 22—Meters and Metering; Tuesday morning, Oct. 23—Gas Distribution; Tuesday afternoon, Oct. 23—Gas Utilization; Wednesday morning, Oct. 24—Gas Production.

A dinner will be held at 6:30 p.m. Tuesday and the conference will close at noon Wednesday.

## Maryland Utilities Mid-Year Meeting

THE mid-year meeting of the Maryland Utilities Association will be held on September 21, 1945 at the Lord Baltimore Hotel, Baltimore, Maryland.

The session will start with a luncheon at 12:30, followed by three addresses in the afternoon upon subjects of current importance to gas, electric, and transportation utilities.

## Convention Calendar

### SEPTEMBER

17-21 •New England Gas Association, Home Service Development Conference, Boston, Mass.

19 •Metropolitan Gas House Heating and Air Conditioning Council, A. G. A. Headquarters, New York, N. Y.

21 •The Maryland Utilities Association, Lord Baltimore Hotel, Baltimore, Maryland

27 •A. G. A. Mid-West Personnel Conference, Fontenelle Hotel, Omaha, Neb.

### OCTOBER

2 •New England Gas Association, Safety Conference, Boston, Mass.

16 •New England Gas Association, Appliance Servicing Conference, Boston, Mass.

17 •New England Gas Association, Operating Division, Boston, Mass.

22-24 •Mid-West Gas Association Gas School and Conference, Iowa State College, Ames, Iowa

24 •American Gas Association Annual Meeting, Engineers Societies Building, New York, N. Y.

### NOVEMBER

23 •Mid-Southeastern Gas Association, Sir Walter Hotel, Raleigh, N. C.

# Accounting Section

C. E. PACKMAN, Chairman

E. F. EMBREE, Vice-Chairman

O. W. BREWER, Secretary

## How Are We Doing?

WE will all accept as fundamental that customer activities operating practices, procedures and policies should be geared to obtaining efficient, economical work results and, at the same time, maintain and promote satisfactory relations with customers. This dual aspect of customer activities often imposes conflicts. We must not place too much emphasis on abstract clerical and work efficiency if, in so doing, we interfere with accomplishing a good customer relations job. On the other hand, we cannot idealize in the sphere of customers' relations and thus impose disproportionate burdens upon an otherwise efficient operating organization. The problem is one which requires constant attention. We should base decisions upon sound business methods after weighing all factors. A prerequisite is flexibility of thinking and the ability to recognize and resolve these conflicts.

It is not the mere rendering of good dependable service that makes the most friends for a company. If the service is hard to get in the first place; if the customer is a victim of arbitrary policies which he does not understand; if he received a notice that his bill is five days overdue; if a hundred other things tend to strain his relations with the company, he gives scant thought to the physical service he is getting, regardless of how little he may pay for it.

### Customers Ask "Why"

Customers are most interested in the "why" of utility operation. By daily habit, our customers compare us with other merchants in the community: the department store, the druggist, the service station, the corner grocer, or, if you will, the super market. All of them operate along similar lines—those of competitive retail merchants—and the baker who puts the thirteenth doughnut in the dozen gets most of the baked goods business. The customer wants to know "why" utilities must be different from other retail establishments.

Recently a joint A. G. A.-E. E. I. Committee undertook a review of member companies to determine what policies and practices made good customer relations and which created unfavorable customer reactions. Questionnaires were sent to men who are responsible for administering customer accounting, service, and collection policies.

The activities of these groups create many of the customers' questions "Why?" To the employees of these groups is trusted the major portion of the burden of creating and

### (A Joint A. G. A.-E. E. I.

#### Customer Activities Report)

BY W. E. STURM

*West Penn Power Co., Pittsburgh, Pa.*

maintaining good customer relations—making the customers enjoy doing business with us: the application clerks, meter readers, collectors, cashiers, billing clerks, repairmen, etc.

This survey was in no sense a customer opinion poll. Instead, it was an *employee* opinion poll in which the man on the firing line expressed his opinions.

Among the replies to the questionnaire were listed twenty-six policies and practices which make friends for the company while twenty-eight were looked upon as a source of irritation to customers. Obviously no one company operates under *all* of the policies and practices on the "Customer Dislike" side of the ledger. Neither can any one company claim that it is doing all of the twenty-six things that employees say the customers like. The replies may be outlined as follows:

#### Customers Like Us When We:

Maintain a friendly and helpful collection policy.

Provide adequate neighborhood pay bill facilities.

Have a policy of periodically allowing forfeited discount to customers who regularly pay within the discount date.

Arrange to transfer unpaid items for service rendered at former address to customer's new address and bill with service used at the new address.

Are liberal in adjusting for leaks or grounds occurring on customers' premises.

Conduct an intelligent and thorough investigation of high bill complaints and other matters by trained representatives.

Allow on the following day discounts for bills due on holidays.

Base collection activity on a selective process as determined by customer performance.

Check on high consumption for billing.

Refund deposit when reasonably good record has been established.

Make services quickly and easily available through adequate personal and telephone contact facilities and elimination of red tape.

Have available sufficient customer records for quick and ready reference in answering inquiries.

Leave electric services "hot" and available for new customer.

Turn on services without delay for credit check.

Provide prompt emergency service.

Adjust appliances promptly.

Renew fuses without charge.

Maintain free shop services for connecting appliances, adjustments and minor repairs, disconnecting and reconnecting to facilitate redecorating or remodeling.

Give customer a courteous reception—personal—telephone—mail.

Have employees who are efficient, courteous, friendly and properly trained and with sufficient authority to handle the largest number of customers to a conclusion.

Maintain one stop service for customer on ground floor of general office.

Separate personal and telephone contact points so that one does not interfere with the other.

Separate customers' work from all other types to avoid delay in service to customers.

Send personal letter to each new customer.

Participate wholeheartedly in civic and trade activities.

Use "customer inquiry" cards to review customers' attitudes.

#### Customers Dislike Us When We:

Read meters on other than a monthly basis. Render incorrect bills (billing error represented most of all).

Average or estimate bills.

Have rigid policy of refusing to allow discount after due date.

Accept payments at net on mailed remittances with postmark of due date but received a day or two later, and not allowing customers to pay net where they personally present the bill at the same time mailed remittances are received.

Issue delinquent notices on all accounts owing certain amount regardless of credit record.

Forfeit discount on bills when customer claims no bill received.

Threat to withhold for 24 hours or longer the restoral of service after cut off for non-payment.

Refuse to waive discounts or penalties more than the specified number of times indicated in the regular company policy.

Refuse to recalculate bills upon customer's statement of irregular use of the billing period.

Read meters through garage or cellar windows.

Fail to indicate on bill when readings are estimated.

*Fail to offer discount allowances.*

Do not have a grace period in postmark determination of discount earning.

Decline to accept payment if service to be cut off because of non-payment.

Place limitations on pay station collections (no arrears bills, no part payments, etc.)

Eliminate field collectors after it has become standard practice.

Fail to use customers' readings "as provided" for reading bill but use them as a basis for estimate.

Use postal card or other type of billing with symbols not understandable to customers.

Transfer arrears or credits from closed to active accounts without explanation.

Have inflexible payable dates making it impossible for customer to select a date most convenient for him to pay.

Require deposits from all tenants regardless of record.

Require customers to bring small appliances to office for repairs.

Make reference to "company rules."

Have contact employees who are not adequately trained.

"Chase customer around" either when making a personal call at office or by telephone.

Have unnecessary "red tape" in dealing with customer.

Indicate a lack of interest in customer.

The above may be classified according to "Likes" and "Dislikes" as follows:

	Likes	Dislikes
1—Billing and Collection	10	21
2—Security Deposits	1	1
3—Contracts and Applications for Service	4	1
4—Employee Training	2	3
5—Company Organization	3	1
6—Miscellaneous	6	1

The headings, "Employee Training" and "Company Organization" have been used to designate policies and procedures that can be improved through either training or organization without actually altering specific

## Toleration

At a state press association banquet one young editor during his speech gave a rather detailed account of how he, when a boy, used to work in the printing office of one of the older editors present and had received one dollar a week for his services, obviously to show that he was a self-made newspaperman.

When the elderly editor, to whom he had referred, arose to give his address, he began by saying: "For several years now I have listened to Mr. G— tell this story about working in my print shop when a boy for one dollar a week, which is very true; and I just wish to give the rest of the story presuming that he does not know it. His father gave me the dollar which I paid him every Saturday night." —*Forbes*.

policies. For example, customers do not like "Lack of Employee Interest" and "Reference to Company Rules" but they do like an organization set-up which permits "one-stop service on ground floor of general office" and "separation of personal and telephone contacts."

As you might expect, considering the group of employees to whom the questionnaire was directed, together with the realization that the customer's closest contact with the company results from payment of bills, the bulk of both favorable and unfavorable comments on utility practices is centered around billing and collections. In general, the comments do not cover major policies but relate mostly to details involved in the overall administration of the policies. It is, of course, recognized that many of the irritating details can be eliminated only by a major change in policy.

Unfortunately there are more billing and collection policies that are disliked by customers than there are policies which make customers like us. One of the frequently mentioned subjects of criticism is that of discounts or penalties, which scores six unfavorable policies against only two favorable. The two favorable votes relate to a liberal interpretation of the discount or penalty rule.

In the field of security deposits and contracts for service, the questionnaire again emphasizes that customers generally do not like rigid contract requirements and deposits and praise companies who make it easy for them to get service.

### Good Conduct Rules

The results of the questionnaire can be summarized best by setting down some rules of "good conduct" which will help to improve customer relations—make the customer like to do business with us.

1. Make it easy for the customer to get service by eliminating "red tape."
2. Accept telephone requests.
  - a. Leave electric meters "hot"—available for a new customer.
  - b. Accept most accounts without security deposits.
    - a. If under certain conditions deposits are necessary, refund them as soon as customer establishes credit.
    - b. Make bills as understandable as possible.
    - c. Avoid estimated bills where practicable.
      - a. In spite of the apparent success of various wartime meter reading plans, many customers dislike anything but monthly meter reading and billing.
    - d. If you must have a discount or penalty in your rate, be liberal in your waiving of discounts for the customer who is only late occasionally in the payment of his bills.
    - e. Provide ample facilities for the payment of bills: collection agents, drop boxes and the like.
    - f. Be selective in the treatment of delinquent accounts. Avoid the practice of issuing delinquent notices on all overdue accounts regardless of credit record.
    - g. Render prompt emergency service to customers' facilities.
    - h. Train your employees to be efficient,

courteous, and friendly; give them enough authority so they may handle the entire customer transaction. Don't give the customer "the run-around."

11. Keep checking your score to see how you are doing and what your customers think of you.

Here are some things that member companies do to check on their progress:

1. An "*independent audit*" of customer attitudes through a systematic interview of selected customers by an employee not regularly contacting these customers, or by an outside agency, is a valuable check on the information obtained through the regular channels of the organization.

2. *Serious scanning of mail* with customer attitude in mind.

3. *Periodic surveys and studies* of those phases of work which, from observation, require improvement.

4. *Close check on changes* in procedure to learn customer reaction.

5. *Analysis of complaints*, so that steps can be taken to correct or eliminate causes.

6. *A good receptionist* in office to see that those coming in aggrieved get to right person and go out satisfied.

7. *Observation* of customers leaving cashiers or customer service departments.

8. *Listening* on telephone or face-to-face conversation.

9. *Have employees report* criticism or praise.

10. *Encourage employees to make suggestions* and submit ideas that will improve service.

11. *Group conferences* of contact employees are helpful in learning customer attitude.

12. *Keep informed* as to practices adopted or discarded in the utility field.

The committee realizes that the survey is a limited one and it is not intended to accomplish other than to lay some groundwork for a consideration of some of our policies and practices. There is no absolute "right" or "wrong" way; conditions and circumstances often are controlling factors. We should like to see a more specific study made of certain of the policies and practices. Certainly they offer a profitable field for development.

## Tuttle Appointed Treasurer

At a regular meeting of the board of directors of the Michigan Consolidated Gas Company on August 17, Henry Tuttle was elected to the position of treasurer. Mr. Tuttle is now vice-president and treasurer of the company.

At the same time, Carter E. Shields was appointed controller of the company.

## Lambert Wins "E"

THE Lambert Meter Company of Plainfield, N. J., manufacturer of gas meters and apparatus, has been awarded an Army-Navy "E" Award for outstanding production of war materials.

# Residential Gas Section

J. H. WARDEN, Chairman

J. J. QUINN, Vice-Chairman

F. W. WILLIAMS, Secretary

## New Type Basic Training Program



R. E. Williams

to be the first major industry to undertake such a program on a nationwide scale.

The course is suitable for use by producers of all categories of gas and for manufacturers of appliances. It is designed for rank and file employees, to aid them in understanding the industry and to encourage them to direct their personal efforts toward building up gas service, creating more jobs and acquiring new business.

R. E. Williams, of the Binghamton, N. Y., Gas Works, chairman of the committee, states that the course has been thoroughly checked for accuracy and for the purpose of avoiding material that could conceivably conflict with the plans or policies of any individual company.

The course constitutes a program of general education for all employees. Provision is also being made for subsequent specialized training for salesmen and dealers through a course entitled, "Residential Gas Salesmanship." This will be available to the industry later in 1945.

Some time ago, the committee presented to the industry a widely accepted system for

selecting salesmen in accordance with the exacting standards of gas utilities. The system has been fully explained in some 150 sales selection clinics held in all sections of the United States.

Warning that "green troops don't win battles," the committee strongly urges that the entire industry move forward now with plans to train its personnel for the period of readjustment that is imminent.

Early in their studies, the committee recognized that a prime requisite of a course for gas industry personnel is to make it interesting as well as informative. Consequently, the new course is as stimulating and thought-provoking as modern tested training tools and methods can make it.

### Spiced With Drama and Humor

Although spiced with drama and humor, the course deals candidly with common errors on the part of gas company employees that endanger customer relationships. It utilizes narration, graphic sound slide-films and text to show how such errors can be minimized or eliminated. It dramatizes true-to-life incidents that promote teamwork and initiative.

Three separate units comprise the course, with two sound slide-films, narratives of specific "cases" and a printed text included in each unit. The component parts are co-

ordinated to promote the interest of employees in their industry in general and in their own company in particular.

The opening unit, "Gas—the Fuel," presents a brief historical sketch of the industry, along with facts about its progressive record and its long background of impressive service. It also explains in an easy-to-grasp style the main types of gas and how each one is produced and distributed. The second unit, "Gas—the Service," is concerned with the cultivation of good public relations. The third and final unit, "Building the Gas Load," stimulates the desire and ability of employees to assist in enlarging the demands for gas service and gas appliances.

Preparation of the course was entrusted to TradeWays, Inc., New York City, an organization with a long and varied experience in training personnel for industrial and service concerns. Their field representatives made an industry-wide study of gas utilities and their sales training problems. As a result, the course is well designed to meet specific needs of our industry.

Since no trained instructors are required, companies can make the leadership of study sessions a responsibility of department heads and supervisors. They will be furnished with Leaders' Guides, which contain all instructions and aids necessary to conduct the group meetings.

It is recommended that the unit meetings, for best results, be small. Groups of between five and twenty persons can best assimilate the training at a minimum cost to the sponsoring company and in a minimum of time.

Prior to the first meeting of each group, individuals enrolled are given a printed narrative of a real-life case accompanied by questions to arouse interest in the subjects



Gas—the service



Gas—the fuel

The basic A. G. A. training course deals with the three general subjects illustrated here, all designed to prove helpful and informative to rank and file gas company employees.



Load building

treated. When the meeting opens the case is discussed. Then a sound slide-film analyzes the case, showing clearly how specific situations might have been better handled to produce ultimate sales and safeguard good customer relations. Following further discussion provoked by the film, a second sound slide-film, or "talking text," outlines the principles which all employees should follow while on their jobs and in their outside contacts with customers.

Finally, at the conclusion of each unit meeting, a bound printed text is given each individual for study and for later review in an oral quiz. It is well-illustrated and easy to read, yet it gives adequate attention to the essential points of the course. It can be retained for permanent reference. To make it easier to conduct, the course requires no examinations and there are no papers to be handed in.

Each unit is a practical treatment of perplexing situations which employees face every day, both on their jobs and away from them. Pictures, "talking texts" and printed material show employees how their opportunities for advancement increase as they acquire a genuine interest in their own and their company's welfare. They are shown

convincingly how an expanding industry, such as the gas industry, strengthens their community and enhances the security of those associated with it.

Some companies are expected to present the course on "Fundamentals of the Gas Industry" as it stands now, but the committee is convinced that the utilities will derive maximum benefits from it if they add to it a program giving special consideration to their own policies and activities.

Mr. Williams and his committee believe that the men and women whose companies present this course will get out of it material for self-improvement, which will produce increased confidence, better balanced personalities, a tolerant understanding of other viewpoints and an aroused interest in helping their industry meet new problems, develop its service and improve its relationships with customers.

In a broader way, the committee feels that the training thus offered will simplify the transition period of the near future. "Industry must make its preparations immediately for increased business activity after the war," says Mr. Williams. "More than that, it must encourage its personnel to understand the factors that create new jobs, and it must train them to apply these factors intelligently. Our industry will have this new plan in operation soon, and we anticipate that it will play an important part in postwar development."

In addition to Mr. Williams, the membership of the committee includes the following: J. J. McKearin, Boston Consolidated Gas Company, Boston, Massachusetts; W. L.

Hutcheson, Manufacturers Light & Heat Co., Pittsburgh, Pa.; R. J. Canniff, Servel, Inc., Evansville, Indiana; Dean A. Strickland, United Gas Corp., Houston, Texas; R. A. Gordon, Washington Gas Light Co., Washington, D. C.; Henry J. Drupp, Milwaukee Gas Light Co., Milwaukee, Wisconsin; E. M. Demlow, Citizens Gas and Coke Utility Co., Indianapolis, Ind.; K. S. C. Ross, Pacific Gas and Electric Co., San Jose, California.

Information about the course, and the more highly specialized program for salesmen now in an earlier stage of development, is obtainable from R. E. Williams, Chairman, Committee on Selection and Training of Sales Personnel, American Gas Association, 420 Lexington Avenue, New York 17, New York.

## U. S. "Seal of Approval" Is Expected

HENRY WALLACE, Secretary of Commerce, is expected soon to reorganize the National Bureau of Standards and expand its work. In this he is going along with a recommendation made by the American Standards Association policy committee headed by Charles E. Wilson, president of General Electric. While he is about it, Mr. Wallace may adopt a plan permitting manufacturers to use in their labeling and advertising a government "seal of approval" if their merchandising meets minimum specifications drawn up by the bureau. The idea is that such a program would help small manufacturers go places.

*Printers' Ink, August 3, 1945*

## Electronics

● Electronics, that marvel of electrical science which contributed so heavily to the defeat of the Axis, can do a lot of things but it won't revolutionize your home overnight, says an article in the *New York World Telegram*, August 20. Here are some of the warnings voiced for too-gullible housewives:

"Electronics can do things so wonderful that electronically-controlled gadgets seem to possess human brains. Electronics could make your home so comfortable, your home work so easy, that the maid problem would disappear.

"But unless you are wealthy, you probably won't have that sort of electronically-operated home within your lifetime. Your children may see it come to pass. . . .

"It is possible to cook a pound of roast in two seconds. It is possible to have an electric eye turn on the lights when you enter a room and turn them off when you leave. It is possible, every time you light a match for a cigaret, to have an electric eye start a fan to blow out the match for you. . . . Almost—if price and practicality were no object—you could make up your own stunt, place an order and have electronic devices evolved to work your Arabian Nights will.

"Forget those stunt gadgets for years to come. . . . To roast your prime ribs in two seconds, for example, would require a \$50,000 range that would be 13 feet long, five feet deep, seven and a half feet high and would use 150,000 watts of current."

## N.E.G.A. Home Service Conference September 17 to 21

PRESIDENT D. S. REYNOLDS of the New England Gas Association has announced that 23 speakers have accepted invitations to lecture at the Home Service Development Conference to be held Sept. 17 to 21 in Boston. The conference, considered one of the most comprehensive home service courses ever presented in this country, will cover subjects from gas making through food making.

The Home Service Educational Committee queried the New England gas company managers a year ago as to the extent of their interest in sending home service representatives to attend such a course. The replies indicated a very favorable response. Since then, the committee and a number of consultants, from both inside and outside the gas industry, have been preparing details of the agenda.

Lecturers have been obtained from gas utilities, gas trade associations, home economics schools, women's magazines, radio broadcasting stations, newspapers, appliance manufacturers, food manufacturers, food trade associations and chain food stores. The speakers are compiling texts to be included in looseleaf books which will be issued to home service representatives attending the confer-

ence. Sessions will run from 9 A.M. to 5 P.M.

Several appliance manufacturers have indicated their willingness to have exhibits at the conference.

Mrs. Lillian P. Dunbar of Cambridge, past chairman of the N. E. G. A. Home Service Group, is the chairman of the committee arranging the conference. The present chairman of the home service group is Susan A. Mack of Boston, while the chairman of the Sales Division is Robert E. Finnin, also Boston. Mrs. Hazel Cheever of Malden, immediate past chairman of the home service organization, is the chairman of a subcommittee which is active in arranging conference details.

In announcing the September conference, President Reynolds commented as follows:

"The proposed Home Service Development Course is workable and sound in its conception. In developing the course, the committee scrutinized each phase of the training course to ascertain that it was the most appropriate for a proper realization toward establishing home service on an even sounder footing than at present. The program follows many months of work and conferences by the committee members."

## Nationwide Meetings Planned To Spur Residential Gas Sales Programs



J. H. Warden

A SERIES of thirty regional meetings for the purpose of crystallizing the postwar residential gas sales programs of utilities has been arranged by the Residential Gas Section of the American Gas Association. The meetings, which will be held in Montreal and leading cities in this country, are specifically designed to assist gas companies to promote the sale of gas and gas appliances.

Co-ordinated with the Association's meetings will be a presentation of the Janitrol All-Gas Merchandising Plan, a sales program designed by the Surface Combustion Company to shorten the transition from war to peace-time activities.

Executives of the gas industry will conduct the regional meetings. Group luncheons will offer an opportunity for informal discussions. The daily programs will include a presentation of the Janitrol plan; and of a new plan to increase "CP" sales by James I. Gorton, "CP" promotional director of the A. G. A. E. M.

G. M. Rhode or Frank McFerran, Ruud Manufacturing Company, will tell gas companies of the possibilities of increased water heating loads, and H. Preston Morehouse, of Public Service Electric & Gas Company, Newark, N. J., will present in visual form, "Another Key to the New Home Market." Frank W. Williams, secretary of the Residential Gas Section, who has arranged the meetings and the program, will make a visual presentation of the new training course for all gas company personnel, "Green Troops Don't Win Battles."

The list of scheduled meetings, with executives who will preside, is as follows:

Sept. 14—Montreal, Canada, Mont Royal Hotel—J. E. P. St. Jean, Montreal Consolidated Light and Power Co., Montreal, Canada, representing Canadian Gas Association.

Sept. 17—New York, N. Y., Biltmore Hotel—B. A. Sciple, vice-president in charge of sales, Jersey Central Power & Light Co., Asbury Park, N. J.

Sept. 19—Hartford, Conn., Hartford Gas Co. Auditorium—N. B. Bertollete, president, Hartford Gas Co., Hartford, Conn.

Sept. 21—Boston, Mass., Boston Cons. Gas Co. Auditorium—J. J. Quinn, sales manager, Boston Consolidated Gas Co., Boston, Mass.

Sept. 25—St. Louis, Mo., Statler Hotel—R. J. Vandagriff, general sales manager, The Laclede Gas Light Co., St. Louis, Mo.

Sept. 28—Chicago, Ill., Stevens Hotel—W. M. Chamberlain, sales manager, Michigan Consolidated Gas Co., Grand Rapids, Mich.

Oct. 1—Milwaukee, Wis., Pfister Hotel—B. T. Franck, vice-president, Milwaukee Gas Light Co., Milwaukee, Wis.

Oct. 3—Minneapolis, Minn., Nicollet Hotel—E. J. Boyer, sales manager, Minneapolis Gas Light Co., Minneapolis, Minn.

Oct. 8—Seattle, Wash., Olympic Hotel—Norbert O. Fratt, vice-president, Seattle Gas Co., Seattle, Wash.

Oct. 12—San Francisco, Cal., St. Francis Hotel—John S. C. Ross, manager, domestic sales, Pacific Gas and Electric Co., San Francisco, California.

Oct. 15—Los Angeles, Cal., Southern California Gas Co. Auditorium—F. M. Banks, vice-president, Southern California Gas Co., Los Angeles, Cal.

Oct. 19—Denver, Colo., Brown Palace Hotel—Roy G. Munroe, supt., dealers & bldrs., Public Service Company of Colorado, Denver, Colo.

Oct. 23—Omaha, Nebraska, Fontonelle Hotel—W. S. Byrne, general manager, Metropolitan Utilities District, Omaha, Nebraska.

Oct. 26—Tulsa, Oklahoma, Mayo Hotel—J. H. Warden, sales manager, Oklahoma Natural Gas Co., Tulsa, Oklahoma, and chairman, Residential Gas Section.

Oct. 29—Dallas, Texas, Adolphus Hotel—D. A. Hulcy, president, Lone Star Gas Co., Dallas, Texas.

Nov. 1—Houston, Texas, Rice Hotel—Frank C. Smith, president, Houston Natural Gas Corp., Houston, Texas.

Nov. 5—New Orleans, La., Roosevelt Hotel—A. B. Paterson, president, New Orleans Public Service Co., New Orleans, La.

Nov. 9—Jacksonville, Fla., George Washington Hotel—J. W. Owen, manager, Central Florida Gas Corp., Winter Haven, Fla., representing Gas Meters Association of Florida-Georgia.

Nov. 12—Atlanta, Georgia, Atlanta Biltmore Hotel—J. W. Lea, sales manager, Atlanta Gas Light Co., Atlanta, Ga.

Nov. 15—Birmingham, Ala., Tutwiler Hotel—Charles B. Gamble, president, Birmingham Gas Co., Birmingham, Ala.

Nov. 19—Roanoke, Va., Roanoke Hotel—E. V. Bowyer, sales manager, Roanoke Gas Co., Roanoke, Va., representing the Mid-South Eastern Gas Association.

Nov. 22—Washington, D. C., Statler Hotel—Leon Ourusoff, manager, Utilization Dept., Washington Gas Light Co., Washington, D. C., Chairman, committee on Housing.

Nov. 26—Philadelphia, Pa., Ben Franklin Hotel—Morning Session: Frank Trembly, Jr., assistant sales manager, Philadelphia Gas Works Co., Philadelphia, Pa. Afternoon Session: Joseph F. Gaskill, sales manager, Philadelphia Electric Co., Philadelphia, Pa.

Dec. 3—Cincinnati, Ohio, Gibson Hotel—E. R. Rothert, manager of gas commercial dept., Cincinnati Gas and Electric Co., Cincinnati, Ohio.

Dec. 5—Columbus, Ohio, Deshler-Wallack Hotel—B. H. Gardner, vice-president, Columbia Engineering Corp., Columbus, Ohio, chairman, Appliance Financing Committee.

Dec. 7—Detroit, Michigan, Statler Hotel—N. E. Loomis, merchandising manager, Michigan Consolidated Gas Company, Detroit, Mich., representing Michigan Gas Association.

Dec. 10—Cleveland, Ohio, Carter Hotel—J. French Robinson, president, The East Ohio Gas Company, Cleveland, Ohio.

Dec. 12—Pittsburgh, Pa., William Penn Hotel—Christy Payne, Jr., sales manager, Peoples Natural Gas Co., Pittsburgh, Pa., representing Pennsylvania Natural Gas Men's Association.

Dec. 14—Buffalo, New York, Statler Hotel—Morning Session: O. F. Flumerfelt, president, Iroquois Gas Corporation, Buffalo, New York. Afternoon Session: S. B. Severson, vice-president, Republic Light Heat & Power Co., Inc., Buffalo, New York.

Dec. 17—Rochester, New York, Seneca Hotel—Herman Russell, president, Rochester Gas & Electric Corp., Rochester, N. Y.

## New Dealer Sales Kit Announced To Aid Sale of "CP" Ranges



One of a series of "CP" ads in 18 trade publications telling dealers to get the new sales kit and tie in with the program

OF the 21,305,000 gas ranges in use in the U. S. and Canada, 60%, or nearly 12,730,000 are more than ten years old. To help dealers sell this highly profitable market, gas utilities and manufacturers have launched the largest national advertising and promotional program in their history.

A new sales kit designed to help dealers

tie-in to the gas industry's enlarged promotional activity and sell better grade gas ranges in volume postwar, will be available early in September, according to James I. Gorton, Association of Gas Appliance & Equipment Manufacturers, "CP" Promotional Director.

This new "CP" sales kit, entitled "A New Kind of Postwar Plan—Selling 2 Out of 3 Women for You!" is a joint project of 20 gas range manufacturers who build gas ranges to "CP" standards.

Chief purpose of the "CP" kit is to bring dealers up-to-date on the gas industry's new \$1,400,000 national advertising and promotional campaigns, sales training programs, New Freedom Gas Kitchen activity, architect and builder reference manual, new home builder's programs, and other A. G. A. and A. G. A. E. M. promotions. In addition to these industry-wide campaigns, each of the 20 "CP" manufacturers is planning enlarged campaigns to sell individual brand names and features.

Material for use by dealers and described in this new "CP" kit, includes window and floor displays, bill stuffers, wall murals, kitchen photographs, sound slide films, billboard and car-card posters, miniature, kitchen displays, salesmen's selection and salesmen's training guides, newspaper ads and store planning guides. All industry-wide material will be supplemented by individual programs produced by each of the 20 "CP" manufacturers.

Copies of the kit are available from the Association of Gas Appliance & Equipment Manufacturers, "CP" manufacturers, and from gas utilities.

## Home Service to the Rescue

HOME service directors of two natural gas companies recently prevented a food crisis in a Salem, Ohio, hospital.

Without warning, the dietitian and head cook suddenly "quit" their vital posts at this hospital. A newly appointed superintendent had not yet arrived to take over hospital supervision. The next in line was in a dither as patients and institution personnel had to be fed.

Flora G. Dowler, home service supervisor for The Manufacturers Light & Heat Company and its associated natural gas companies, heard of the predicament. After discussing how the public utility might lend assistance to the hospital with W. L. Hutchesson, sales manager for the companies, she dispatched two of her home service directors.

Mary Ellen Vick of the Natural Gas Company of West Virginia arrived at the hospital from her Salem office and Camille Caldara soon joined her from the Manufacturers Light & Heat Company office in East Liverpool, Ohio.

From her dietetics training received in the

Jefferson Medical College hospital in Philadelphia, Miss Caldara planned the trays for the patients. For three busy days, she and Miss Vick presided over the preparation of food, took inventories, made market orders, and wrote a memorandum to guide food selection and preparation for an additional ten-day period.

The emergency service rendered by these natural gas company home service directors not only saved the institution from serious embarrassment, but also paved the way for the new, permanent personnel to take over in a most efficient manner.

## Ready for Them

(Canadian Gas Association News Letter, July 7)

R. M. CONNER'S excellent paper, the opening leader of the Convention Sessions, on June 20, proved an eye-opener to many who may have held doubts as to the ability of the gas industry to meet all comers

when it came to gas appliances and equipment, but now practically in readiness to prove to the most sceptical that gas will do and meet every claim made for any other and competing fuel. Much of what is now available is we fear well ahead of our abilities to sell such efficient appliances, for no matter how good our goods are they will never be sold unless our abilities to sell are also on an equally high standard.

However, Mr. Conner, has shown us what the Laboratories have done for us, now let us go out with some of Mr. Conner's enthusiasm and it will not be long before our customers and prospects will want what we have to offer them. Thank you Mr. Conner for the excellent job you and your fine staff have done to bring us the tools. May we learn soon just how to use them.

## West Coast Research Meeting Wins Approval

MEMBERS of the Water Heater Division at a recent meeting expressed their satisfaction with the West Coast Technical Conference on Domestic Gas Research, held in Los Angeles, July 26 and 27, and recorded their belief that the material presented will prove of continuing value. A motion was passed expressing "thanks and appreciation to the members of the American Gas Association, the P. C. G. A. and the individuals who had assisted in making the conference not only possible but also so completely successful."

The conference consisted largely of prepared papers and discussion of domestic research at the A. G. A. Laboratories and was held under the joint sponsorship of the A. G. A. Committee on Domestic Gas Research and the Manufacturers and Sales Sections of P. C. G. A.

## Gas Air Conditioning Schools Sponsored

AS air conditioning application engineering schools are being conducted by Servel, Inc., in many cities throughout the country. The current schools are a two-and-a-half day streamlined version of the five day schools sponsored before the war at the Servel plant to train gas utility personnel in the essentials of gas air conditioning application.

The course of study is divided into six parts, as follows: design standards; cooling load calculations; air distribution problems and grille selection; duct sizing; Servel products; and types of applications. Schools are conducted under the supervision of H. C. Pierce, with assistance of W. J. Hoeing and other members of the company's air conditioning staff.

Since the development of the program, six schools have been held: Dallas, Texas; Oklahoma City, Okla.; Detroit, Mich.; Minneapolis, Minn.; Washington, D. C.; and Holdrege, Nebraska.

# Industrial & Commercial Gas Section

HARRY K. WRENCH, Chairman

HARRY A. SUTTON, Vice-Chairman

EUGENE D. MILENER, Secretary

## Advertising Program Expanded



J. P. Leinroth

THE current program in the 21st year of A. G. A. Industrial and Commercial National Advertising is the largest ever undertaken by the Association. In view of the present national business prospects, it will serve to stimulate the use of gas, and the sale of equipment and appliances in these fields.

The replacement market and new war developed uses for gas promise greater opportunities for gas utilization.

Recent additional coverage in important fields brings the total number of trade, business and technical magazines to 24 publications in 16 fields. In addition, 37 engineering college magazines are being used, making a total of 535 pages of advertising during the Association year, aggregating nearly 600,000 circulation. The following list exemplifies the broad coverage made possible by the additional magazines included in the currently enlarged program.

### Fields and Publications

**Metals**—The Iron Age, Steel, Metals & Alloys, Metal Progress, Foundry.

**Ceramics and Glass**—Ceramic Industry, Glass Industry.

**Food**—Food Industry.

**Chemical**—Chemical and Metallurgical Engineering, Chemical and Engineering News.

**Baking**—Bakers Weekly, Bakers Helper.

**Commercial Cooking**—American Restaurant, Restaurant Management, Hotel Management, Modern Hospital, Institutions, Nation's Schools.

**General Industrial**—Industrial Heating, Modern Industry, Factory.

**Business Executive**—Business Week.

**Chain Stores**—Chain Store Age (Restaurant and Soda Fountain Edition).

**Publication**—Editor and Publisher.

**Textiles**—Textile World.

**Engineering College Magazines**—U. of Alabama 'Bama Beam, U. of California Engineer, U. of Colorado Engineer, Yale Scientific Magazine, U. of Idaho Engineer, U. of Illinois Technograph, Illinois Tech. Engineer & Alumnus, Northwestern U. Engineer, Purdue Engineer, Rose Technic, Iowa State Engineer, U. of Iowa Transit, Kansas State Engineer, U. of Kentucky Engineer, Tulane

U. Techni-Torque, M. I. T. Tech Engineering News, U. of Michigan Technic, Wayne U. Engineer, U. of Minnesota Technolog, U. of Nebraska Blue Print, Cornell Engineer, C. C. N. Y. Vector, N. Y. U. Quadrangle, U. of Rochester Indicator, Dukengineer, Ohio State Engineer, U. of Oklahoma Sooner Shamrock, Oklahoma State Engineer, Oregon State Technical Record, U. of Pennsylvania Triangle, Carnegie Technical, Penn State Engineer, Villanova Engineer, Citadel Engineer, U. of Tennessee Engineer, U. of Wisconsin Engineer, Marquette U. Engineer.

The additional fields covered in the new schedule are: Chain Stores (Restaurants and Soda Fountains); Publishers, Printers, etc.; Textile Industry; and Engineering College Students and Alumni.

Due to the importance of the metals field an additional publication has been added. And because the chemical field is too large to be adequately covered by one publication, another has been added. Increased space will be used in several important magazines for greater prestige value. The addition of engineering college magazines was decided upon as a method of obtaining a better understanding of gas and its industrial and commercial

possibilities on the part of engineering college students who will soon take their place in industry, as well as faculties and influential alumni.

Considerable thought was given to this year's program by the National Advertising Committee of the Industrial and Commercial Gas Section under the leadership of J. P. Leinroth, chairman and F. B. Jones, vice-chairman. The program was approved by the Association's National Advertising Committee of which H. Carl Wolf is chairman. This expanded advertising program will give adequate coverage to help maintain a strong position of leadership in the reconversion and postwar periods. The campaign has been strengthened commensurate with the present importance and future possibilities of industrial and commercial gas.

### A. G. A. Slogan Chart Used

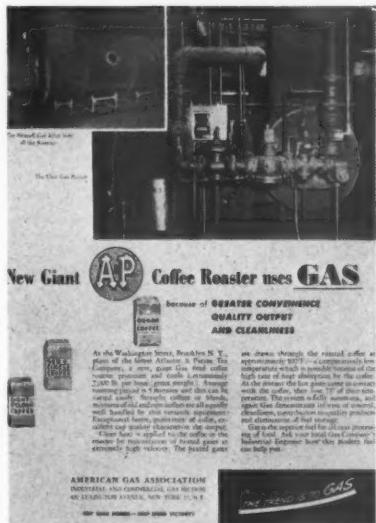
FOR a number of years 36 Massachusetts gas companies have sponsored monthly full-page, two-color industrial gas advertisements in *Industry*, the magazine of the Associated Industries of Massachusetts. Recently, the practice was adopted of using the A. G. A. Industrial and Commercial Gas slogan chart, "The Trend Is To Gas—For All Industrial Heating." In a recent issue use was also made of the cut with the micrometer and the wording, "Gas—the precision fuel," from an A. G. A. advertisement.

### Metal-Working Is Fertile Gas Field

THE magazine *Steel* in a recent Data Sheet sent to subscribers, sets forth the following interesting facts about the metal-working industry.

Metal is used in every production process or product, as a production tool or the product itself. To fabricate the intricate tools of industry, and to process the multitude of products which contain metal, heat in some form is used from the basic ore to finished product. Gas fuel supplies this needed heat in a great many instances, especially in finishing, where accurate heat control is required to give various degrees of hardness, finishes, and in necessary tempering and annealing processes.

The metal-working industry has shown the largest wartime growth in relation to all other industry and has always been the largest segment of American industry, according to this



One of the current ads in the enlarged A. G. A. industrial and commercial program, this copy is appearing in Food Industries and other food manufacturing trade magazines

survey. The use of gas in metal-working has increased with the growth of this phase of manufacturing, and its uses are as varied as the metal items produced. Metal-working and metal-producing is such a large part of our economy, an industrial empire in itself, it will readily be seen how gas for heating operations enters the industrial picture.

## Skin Recovery Process in Gas Furnaces

**S**KIN Recovery is the title of a recent broadside issued by Surface Combustion Corporation, Toledo, Ohio, wherein is described the process of restoring the carbon surface of steel during hardening in either batch or continuous-type radiant tube gas-fired furnaces.

The loss of carbon on steel surfaces is usual in hardening unless preventive measures are taken to eliminate or minimize this characteristic. Through the medium of controlled atmospheres in radiant tube gas-fired furnaces, the correct carbon potential can be maintained, thus not only can carbon restoration take place, but surface decarburization is prevented. It is pointed out that this Skin Recovery process is not only applicable to carbon steels up to and including SAE 1095, but has proved satisfactory for most alloy steels.

If surface decarburization can be prevented during the hardening process, it is obvious that subsequent machining or grinding operations can be largely eliminated in order to restore the required surface characteristics.

## Gas Aids Pipe Smokers

A RECENT issue of the *Brooklyn Union Gas News*, describes how gas speeds the drying of briar roots for pipe bowls.

Due to the shortage of Italian briar, Henry, Leonard & Thomas of Ozone Park, L. I., have substituted rhododendron roots, as they make an excellent grade of pipe.

Three large gas-fired unit heaters are used to heat the air in the drying room to 90° where the roots are dried before being made into pipe bowls. The speed with which gas-heated forced air seasons the roots, has reduced the former drying time by 80%. The three heaters now in use are expected to use more than 1,000,000 cubic feet of gas annually, and plans are under way to install seven additional unit heaters.

## Cornerstone Laid for Oil Research Center

**S**YMBOLIC of a new industry which may arise in the Rocky Mountain West, the cornerstone of the new \$534,000 oil shale research and development laboratory now under construction for the Bureau of Mines at Laramie, Wyo., was laid on August 23.

In the presence of distinguished civic and business leaders of Wyoming and Colorado, the cornerstone was laid by Senator Joseph C. O'Mahoney of Wyoming, who sponsored in the United States Senate the synthetic liquid fuels legislation under which this laboratory and other research facilities are being built.

## AMERICAN GAS ASSOCIATION INDUSTRIAL AND COMMERCIAL GAS

### ADVERTISING FOR SEPTEMBER

The National Advertising Committee of the Industrial and Commercial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full page advertisements will appear in the trade and business magazines listed below during the month of September. These advertisements are prepared in cooperation with the Committee on National Advertising as part of the industry's national advertising campaign.

#### GENERAL MANUFACTURING

How *GAS* nurses X-Ray Tubes to finished manufacture.

BUSINESS WEEK (Sept. 22)

To secure greater depth of hardness without overheating surface—tool maker switches to *GAS*.

MODERN INDUSTRY (1/2 page)

Continuous heat treatment of 155 mm shells . . . another big job well done with *GAS*.

INDUSTRIAL HEATING

Memo to Executives:

The Trend is to *GAS* for all Industrial Heating Processes.

FACTORY MANAGEMENT & MAINTENANCE

#### METALS INDUSTRY

Memo to Executives: The Trend is to *GAS* for all Industrial Heating Processes.

FOUNDRY

*GAS* Fuel burned in an acid bath advances metal pickling technique by years.

THE IRON AGE (Sept. 6)

*GAS* precision control helps manufacturer save precious tin—and brings other advantages.

STEEL (Sept. 17)

METALS AND ALLOYS

METAL PROGRESS

#### TECHNICAL COLLEGE PUBLICATIONS

World's Largest Producer of Penicillin uses *GAS* for important operation.

ENGINEERING COLLEGE MAGAZINES

UNIV. OF ALABAMA 'BAMA BEAM

TULANE TECHNIC-TORQUE

CALIFORNIA ENGINEER

N. Y. U. QUADRANGLE

NORTHWESTERN UNIV. ENGINEER

DUKENGINEER

PURDUE ENGINEER

UNIV. OF OKLAHOMA SOONER SHAMROCK

ROSE TECHNIC

PENN STATE ENGINEER

IOWA STATE ENGINEER

UNIV. OF WISCONSIN ENGINEER

#### CERAMIC INDUSTRY

Lenox Decorating secures . . . 100% heat control, greatly reduced costs and 100% cleanliness since switching to *GAS*.

CERAMIC INDUSTRY

#### GLASS INDUSTRY

Fulper Pottery Company finds *GAS* Bisque and Glost Firing effects 50% time saving, 100% temperature control, elimination of rejects.

GLASS INDUSTRY

#### CHEMICAL FIELD

Industrial *GAS* Air Conditioning is Benefiting these and other industries. Is Yours Among Them?

CHEMICAL & METALLURGICAL ENGINEERING

Memo to Executives: The Trend is to *GAS* for all Industrial Heating Processes.

CHEMICAL AND ENGINEERING NEWS (September 10)

#### TEXTILE FIELD

Memo to Executives: The Trend is to *GAS* for all Textile Operations Requiring Heat.

TEXTILE WORLD

#### HOTEL AND RESTAURANT FIELD

"Our Change to Modern *GAS* Cookery has given us Freedom from Guesswork in Cooking."

AMERICAN RESTAURANT INSTITUTIONS

(4/9 page)

Do you know about *GAS* Ceramic Broiling—one of the greatest advantages *GAS* brings to the kitchen?

HOTEL MANAGEMENT

RESTAURANT MANAGEMENT

#### SCHOOL FIELD

Here's Why the Trend is to *GAS* for all Commercial Cooking.

NATION'S SCHOOLS

#### HOSPITAL FIELD

Here's Why the Trend is to *GAS* for all Commercial Cooking.

MODERN HOSPITAL

#### FOOD PROCESSING

Bond Bakers secure utmost economy, excellent quality, increased speed of production . . . since selecting *GAS* for Doughnut Baking.

FOOD INDUSTRIES

#### BAKING FIELD

Here's Why the Trend is to *GAS* for all Commercial Baking.

BAKERS' HELPER (Sept. 8)

BAKERS WEEKLY (Sept. 17)

#### FOUNTAIN AND RESTAURANT FIELD

Schrafft's Busy Times Square Restaurant cooks 5,000 meals daily with *GAS*.

CHAIN STORE AGE (Fountain-Restaurant Section)

#### NEWSPAPERS, PUBLISHERS, ETC.

Memo to Executives: The Trend is to *GAS* for all Newspaper Operations Requiring Heat.

EDITOR AND PUBLISHER (Aug. 25)

# Technical Section

L. E. KNOWLTON, Chairman

LESTER J. ECK, Vice-Chairman

A. GORDON KING, Secretary

## Spontaneous Heating Tendencies of Coals<sup>1</sup>

BY J. L. ELDER,<sup>2</sup>  
L. D. SCHMIDT,<sup>3</sup> W. A. STEINER,<sup>4</sup>  
and J. D. DAVIS<sup>5</sup>

Written discussion of the following paper will be welcome for subsequent publication in the MONTHLY. Such discussion should be signed and should be submitted before the end of September. It will be referred to the authors for comment and published in the November issue.

INDUSTRIAL users of coal find it advisable to store supplies for several months to insure continuous operation of their plants during interruption of deliveries because of transportation difficulties, strikes, etc., and the problem of selecting the coal best suited for storage arises. The method of storage adopted is also of prime importance because

Presented by

SUB-  
COMMITTEE  
ON CARBON-  
IZATION  
AND COKE

C. C. RUSSELL  
*Chairman*

it is known that coals which usually store well have taken fire when stored carelessly. Methods of storage have been the subject of considerable investigation, good procedures have been worked out, and the information is available. The present

paper will deal only with a method of distinguishing between coals as to their inherent tendencies to heat spontaneously under the same storage conditions.

The Bureau of Mines has been concerned with investigations of methods for the safe storage of coal<sup>6, 7</sup> and fundamental investi-

<sup>1</sup> Published by permission of the Director, Bureau of Mines, United States Department of the Interior, Washington 25, D. C.

<sup>2</sup> Chemical engineer, Central Experiment Station, Bureau of Mines, Pittsburgh, Pa.

<sup>3</sup> Engineer-in-charge, Coke Production Survey, Central Experiment Station, Bureau of Mines, Pittsburgh, Pa.

<sup>4</sup> Chemist, Central Experiment Station, Bureau of Mines, Pittsburgh, Pa.

<sup>5</sup> Supervising chemist, Coal Carbonization Section, Central Experiment Station, Bureau of Mines, Pittsburgh, Pa.

<sup>6</sup> Stock, H. H. Safe Storage of Coal. Bureau of Mines Tech. Paper 235, 1920, 10 pp.

<sup>7</sup> Hood, O. P. Spontaneous Combustion of Coal in Storage. Jour. Am. Soc. Heat. and Vent. Eng., vol. 27, 1921, pp. 753-759.

Factors in the Spontaneous Combustion of Coal. Mech. Eng., vol. 45, 1923, pp. 61-64.

Storage of Coal. Min. and Sci. Press, vol. 122, 1921, p. 131.

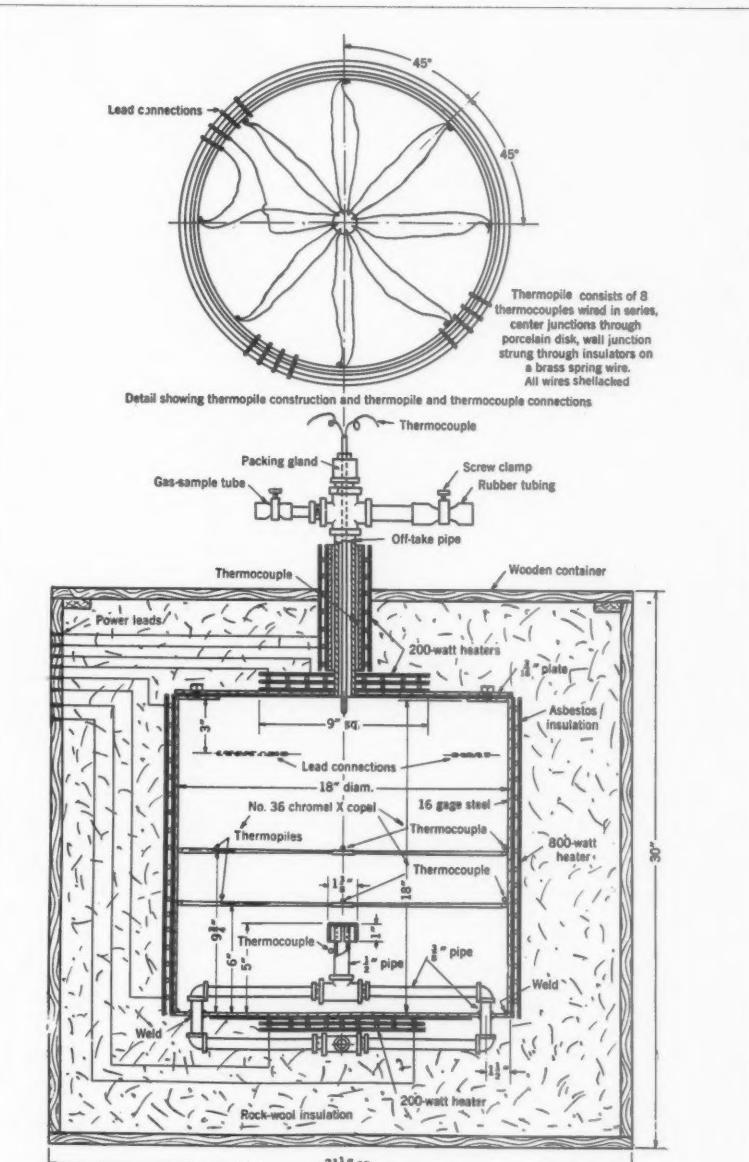


Figure 1. Adiabatic calorimeter for spontaneous heating tests on coal

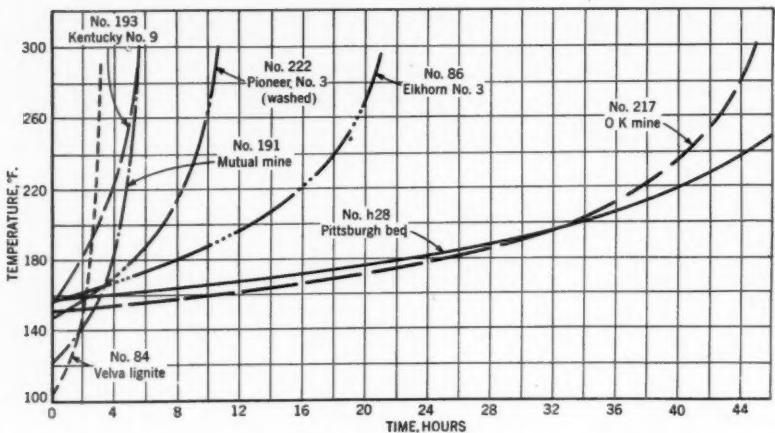


Figure 2. Spontaneous heating of dry, stage-crushed 0-1/4-inch coal in the adiabatic calorimeter

gations of the various factors influencing spontaneous heating of coal,<sup>8,9</sup> since its organization. The work now in progress may be looked upon as a particular phase of the general problem of spontaneous combustion. It was initiated at the request of the Coordinator for Solid Fuels to obtain specific information as to which coals offered to government agencies would be least likely to heat spontaneously in storage. Actual laboratory tests were required of samples of coals submitted, and the reports of the results obtained were to serve as a basis for selection and for making adequate provisions for storage. The routine testing and reporting involved has been operative for approximately 2 years.

#### Cause of Spontaneous Heating During Storage and Available Methods of Test

Spontaneous combustion of coal is caused by the reaction of oxygen from the air with the pure coal substance. The presence of impurities modify the rate of this reaction; that is, a quantity of inert material present, such as ash, tends to slow the reaction rate while the presence of certain compounds of sulfur

may accelerate the rate. The reaction is strongly exothermic, and if heat is generated faster than it can be dissipated by means of conduction, convection, and radiation, the temperature of the coal will rise until a fire results. The rate of this reaction is governed by several factors, the most important being the ranks of coal, the past history of the coal, the temperature, the surface area exposed to oxidation which is a function of the particle size, the concentration of the oxygen in the atmosphere surrounding the coal particles, and the moisture and ash content of the coal.

As spontaneous combustion depends on the rate of oxidation, and consequently on the rate of heat generation, two methods of comparing coals as to their relative tendencies to heat spontaneously suggest themselves, viz.: (1) measurement of the rate at which oxygen is consumed under isothermal conditions, and (2) measurement of the rate of generation of heat. If it is assumed that the heat capacity of coals tested is the same, and it is nearly the same, the second method amounts to measurement of temperature rise in similar quantities of coal under test. Both methods have been adopted by the Bureau, but the second is used for most of the comparative work because the test procedure is less complicated. Studies of the rate of heating of coal in a small adiabatic calorimeter made previously<sup>10</sup> furnished the basis for design of the larger calorimeter which is described here.

#### Condition of Samples Tested

The question to be answered by the tests was how rapidly will coals in question heat in comparison with a standard coal (or coals) of which the storage properties are known. It was required, therefore, that all new coals tested be subjected to similar conditions as the standard or known coal. The factors of temperature and oxygen concentration are controlled in the test equipment, but the particle size and the moisture content must be adjusted before the coal is charged to the calorimeter. Accordingly, the procedure adopted was as follows: Samples of about 400 pounds were shipped to the

<sup>8</sup> Porter, H. C., and Ralston, O. C. Study of the Oxidation of Coal. Bureau of Mines Tech. Paper 65, 1914, 30 pp.

, and Ovitz, F. K. Deterioration and Spontaneous Heating of Coal in Storage, a Preliminary Report. Bureau of Mines Tech. Paper 16, 1912, 14 pp.

<sup>9</sup> Davis, Joseph D., and Byrne, John F. Some Factors in the Spontaneous Combustion of Bituminous Coal. Carnegie Inst. Technol. and U. S. Bureau of Mines Bull. 3, 1922, 38 pp.

, Spontaneous Combustion of Coal: Characteristics Shown by an Adiabatic Calorimeter. Ind. and Eng. Chem., vol. 17, 1925, pp. 125-130.

, and Reynolds, D. A. Spontaneous Heating of Coal. Bureau of Mines Tech. Paper 409, 1928, 74 pp.

, The Oxidation of the Constituents of a Resinous Utah Coal. Fuel, vol. 5, 1926, pp. 405-411.

<sup>10</sup> Davis, J. D., and Byrne, J. F. An Adiabatic Method for Studying Spontaneous Heating of Coal. Jour. Am. Ceram. Soc., vol. 7, 1924, pp. 809-816.

laboratory in sealed containers to prevent moisture changes and excessive oxidation in transit. These samples were stage-crushed to pass a 1/4-inch screen and then dried in purified nitrogen at 212° F. The stage-crushing produces a large amount of fresh coal surface and results in an approximately uniform distribution of sizes between 0- and 1/4-inch. Thus each coal is given the same thermal and mechanical treatment before its spontaneous heating tendencies are determined; and where the friability characteristics of a coal are such that an abnormal quantity of fine coal results from stage-crushing, this friability is regarded as a coal property and the resulting increased tendency towards spontaneous heating is also a coal property.

#### Apparatus and Method

The calorimeter, shown in Figure 1, has a capacity of 110 pounds of coal and consists of an 18-inch-diameter, 16-gage cylindrical, steel container 18 inches high. It is fitted with gas preheating pipes and a gas-inlet nozzle near the base, as shown in the illustration. The sample container is fitted with a 3/16-inch steel cover plate which bolts to the top flange and is made tight with a gasket of sheet asbestos. The cover plate is fitted with the gas offtake and gas sample outlet. The walls of the container are insulated with sheet asbestos and wound with evenly spaced nickel-chromium wire forming an 800-watt heating coil. The 1/2-inch gas offtake pipe is enclosed in a nickel-chromium coil of 200-watt capacity, wound on a steel tube having an internal diameter of 1 inch so that the heater may be removed easily for charging the apparatus.

The top cover and the bottom of the container are each equipped with 200-watt heating coils wound on flat sheets of transite and situated as shown. Each of the heating coils used with the calorimeter is equipped with an adjustable external resistance, so that the heat input may be balanced. The container is insulated with 6 inches of rock wool and the entire unit is contained in a wooden box with a removable cover, as shown. Thermocouples of chromel-X-copel No. 36 wire are located at several points in the calorimeter, as indicated, the leads being connected by suitable means to a multiple-point, photoelectric potentiometer which records all temperatures. Two thermopiles, each with 8 couples in series located as shown with alternate junctions at the wall and center of the coal charge, are connected to a photoelectric-type potentiometer temperature controller which serves to keep the temperature of the wall the same as that of the heating coal and so maintain adiabatic heating conditions.

The dry, sized sample is placed in the calorimeter container in such a manner as to avoid segregation of sizes, all electric connections are made, the container is closed, and the charge is heated in a current of pure nitrogen to the temperature at which it is desired to start the oxidation. The controls are so adjusted that when the desired temperature is reached to a close approxima-

TABLE 1  
ANALYSIS OF THE COALS TESTED<sup>1</sup>

Coal No.	Description	Con-dition <sup>2</sup>	Proximate, percent				Ultimate, percent				Sulfur forms, percent				
			Mois-ture	Vola-tile mat-ter	Fixed car-bon	Ash	Hy-dro-gen	Car-bon	Ni-tro-gen	Oxy-gen	Sul-fur	Heating value, B.t.u. per lb.	Sulfate	Pyritic	Organic
h28	Pittsburgh bed, Warden mine, Allegheny County, Pa.	1	1.9	37.1	56.8	4.2	5.5	80.2	1.6	7.7	0.8	14,370	0.001	0.083	0.712
		2	—	37.8	57.9	4.3	5.4	81.8	1.6	6.1	.8	14,650	.001	.084	.725
		3	—	39.5	60.5	—	5.6	85.5	1.7	6.4	.8	15,310	.001	.088	.757
217	O K mine, Durango, La Plata County, Colo.	1	2.8	38.2	52.7	6.3	5.6	76.3	1.5	9.2	1.1	13,730	.048	.513	.558
		2	—	39.3	54.3	6.4	5.4	78.4	1.5	7.1	1.2	14,120	.049	.527	.574
		3	—	42.0	58.0	—	5.8	83.8	1.6	7.6	1.2	15,090	.052	.564	.614
86	Elkhorn No. 3 bed, Wheelwright mine, Floyd County, Ky.	1	2.9	38.5	55.6	3.0	5.7	79.2	1.4	9.9	.8	14,200	.010	.295	.497
		2	—	39.6	57.3	3.1	5.5	81.6	1.5	7.5	.8	14,620	.010	.304	.511
		3	—	40.9	59.1	—	5.7	84.2	1.5	7.7	.9	15,090	.011	.313	.528
222	Walker bed, Pioneer No. 3 mine (washed), Vernon County, Mo.	1	9.2	36.7	43.8	10.3	5.5	65.3	1.0	14.7	3.2	11,730	.081	1.551	1.581
		2	—	40.5	48.2	11.3	5.0	71.9	1.1	7.2	3.5	12,920	.089	1.708	1.742
		3	—	45.6	54.4	—	5.6	81.1	1.2	8.1	4.0	14,560	.101	1.926	1.963
193	No. 9 seam, Pacific mine, Mercer, Muhlenburg County, Ky.	1	7.2	36.1	43.9	12.8	5.2	63.9	1.4	13.3	3.4	11,480	.078	2.166	1.163
		2	—	38.9	47.3	13.8	4.7	68.9	1.5	7.4	3.7	12,370	.084	2.334	1.254
		3	—	45.1	54.9	—	5.4	79.9	1.7	8.7	4.3	14,350	.098	2.707	1.454
191	Mutual mine, Gallup, McKinley County, N. Mex.	1	13.8	34.1	40.2	11.9	5.9	58.7	1.0	22.0	.5	10,360	.009	.225	.267
		2	—	39.6	46.5	13.9	5.0	68.2	1.1	11.2	.6	12,020	.011	.261	.309
		3	—	45.9	54.1	—	5.8	79.1	1.3	13.1	.7	13,950	.012	.303	.359
84	Velva lignite, Voltaire, Ward County, N. Dak.	1	37.0	24.1	31.5	7.4	6.4	40.4	.7	44.9	.2	6,510	.019	.015	.156
		2	—	38.1	50.1	11.8	3.7	64.1	1.1	19.0	.3	10,330	.030	.025	.249
		3	—	43.2	56.8	—	4.2	72.7	1.2	21.6	.3	11,710	.034	.028	.282

<sup>1</sup>These analyses are usually the average of several. For this reason they sometimes differ slightly from analyses previously reported in other publications.

<sup>2</sup>1, Sample as received; 2, moisture-free; 3, moisture- and ash-free.

tion, temperatures are uniform throughout the charge. Uniformity of temperature is insured when it is shown by test that there is no heating (or cooling) with the adiabatic controls operating. After a state of equilibrium is reached, oxygen is admitted to the calorimeter at such a rate that the outlet gases will contain approximately 85 per cent oxygen. The oxygen is preheated to the temperature of the calorimeter before entering

the coal so that heat is not removed from the system by passage of the gas. Provided that the starting temperature is chosen properly, a time-temperature curve representing the characteristic adiabatic heating curve of the coal will be drawn by the temperature recorder.

Figure 2 shows characteristic curves of several coals of different sensitivities, Pittsburgh bed coal in this case being chosen as a standard. Pittsburgh coal is known to be among the best storing of coals and it is

clear that it heats more slowly than any of the other coals shown. Further, it is shown that the Pioneer, Velva lignite, and Kentucky No. 9 coals show appreciable heating rates at starting temperatures lower than that for the Pittsburgh coal because of their much greater sensitivity.

To facilitate a quantitative comparison of the relative spontaneous heating tendencies of different coals, the data given in Figure 2 have been evaluated in terms of rate of heating as a function of the temperature.

TABLE 2  
COMPARISON OF THE SELF-HEATING RATES OF COALS FROM THE ADIABATIC CALORIMETER TESTS

Coal No.	Description	Self-heating rate at 158° F.		Self-heating rate at 212° F.		
		° F. per hour	Ratio to coal h28	° F. per hour	Ratio to coal h28	
h28	Pittsburgh bed, Warden mine, Allegheny County, Pa.	0.783	1	3.29	1	-4800
217	O K mine, Durango, La Plata County, Colo.	1.05	1.34	4.36	1.32	-4740
86	Elkhorn No. 3 bed, Wheelwright mine, Floyd County, Ky.	1.91	2.44	7.11	2.16	-4390
222	Walker bed, Pioneer No. 3 mine (washed), Vernon County, Mo.	4.70	6.00	17.1	5.19	-4320
193	No. 9 seam, Pacific mine, Mercer, Muhlenburg County, Ky.	10.5	13.4	25.2	7.65	-2920
191	Mutual mine, Gallup, McKinley County, N. Mex.	21.2	27.1	65.3	19.8	-3750
84	Velva lignite, Voltaire, Ward County, N. Dak.	57.6	73.6	167.0	50.8	-3560

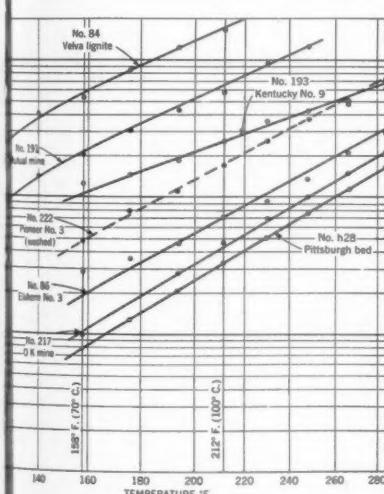


Figure 3. Variation of spontaneous heating rate with temperature

TABLE 3  
THE ESTIMATION OF THE SURFACE AREA OF COAL FROM THE SCREEN ANALYSIS

Size	Factor To Convert Percentage Retention to Surface Area, Square Feet Per Pound
Through No. 3, <sup>1</sup> on No. 4.....	0.0550
Through No. 4, on No. 8.....	.0894
Through No. 8, on No. 16.....	.192
Through No. 16, on No. 30.....	.412
Through No. 30, on No. 50.....	.887
Through No. 50, on No. 100.....	1.89
Through No. 100, on No. 200.....	4.05
Through No. 200.....	13.6

<sup>1</sup> For purposes of surface area calculation assumed through No. 3.

These values have been plotted on graph paper in which the ordinates represent the logarithms of the heating rates, and the abscissas the reciprocals of the absolute temperatures. The values for the heating rates used in the figure were determined by measuring the slopes of the curves of Figure 2 at the various temperatures. From the straight lines shown in Figure 3, the following empirical equation may be derived, relating heating rate to temperature.

Equation 1:

$$\log \left[ \frac{R_1}{R_2} \right] = n \left[ \frac{1}{T_1} - \frac{1}{T_2} \right]$$

where  $R_1$  is the rate of heating in °F. per hour,

$T_1$  is the temperature in °F. absolute at which  $R_1$  was determined, and

$R_2$  is the heating rate at the temperature  $T_2$  in the same units.

$n$  is the slope of the line.

This is the Arrhenius-type equation relating rate of reaction to temperature. If the amount of oxygen the coal uses is expressed as a function of reaction temperature, it has been shown experimentally in the Bureau of Mines laboratories that the same relationship holds. The analyses of the coals of Figure 3 are given in Table 1, and the self-heating rates for temperatures 158° and 212° F., in Table 2; values of the constant  $n$  are also included in Table 2. For comparison, the rate of Pittsburgh coal is taken as 1 and the rates for the other coals represented, which are more sensitive, are expressed as multiples of 1.

#### Value of Test Results

The results obtained in the adiabatic calorimeter give a comparative measure of the rapidity at which different coals will heat when stored under the same conditions; that is, coal 86 will heat 2.44 times as fast at

<sup>12</sup> Schmidt, L. D. Changes in Coal During Storage. Chemistry of Coal Utilization, National Research Council Committee, H. H. Lowry, Editor. John Wiley & Sons, Inc., New York, N. Y., Vol. I, Chap. 18, 1945, pp. 627-676.

<sup>13</sup> American Society for Testing Materials, Standard Method of Test for Screen Analysis of Coal (D 410-38): Standards on Coal and Coke (prepared by Committee D-5 on Coal and Coke), December 1940, pp. 61-63.

<sup>14</sup> Elder, J. L., Schmidt, L. D., Steiner, W. A., and Davis, J. D. The Relative Spontaneous Heating Tendencies of Coals. Bureau of Mines Tech. Paper 681, 1945, 24 pp.

158° F. as coal h28 in the same size, with the same oxygen excess available, the same state of dryness, and the same amount of previous oxidation, etc. If in storage, coal 86 should be coarser than coal h28 (much less surface exposed) the comparative heating rates might well be reversed because large surface, and particularly freshly broken surface, accelerates the heating rate enormously; or, if pockets of fine sizes are allowed to segregate in the storage pile, such spots are fruitful sources of excessive heating. When, therefore, it is necessary to store a mixture of sizes containing some very fine coal, as usually is the case, it is important that the fines be evenly distributed among the coarser sizes. The value of the test lies in the fact that it tells whether a proposed new coal is likely to give more or less trouble than one with which the purchaser has had experience, pains being taken to secure the same conditions of storage in both cases.

The importance of the exposed surface of coal under test (or in storage) as influencing heating tendency has been emphasized. In previous test work investigators have inclined to the use of uniformly fine samples to increase the rate of reaction and thus shorten the test time. However, such test conditions do not simulate those existing in a storage pile and may exaggerate differences between coals. Accordingly, in the present tests the size of the coal was chosen within the range of sizes of stored slack. The rate of oxidation is known to be very slow for sizes larger than  $\frac{1}{4}$ -inch; it is the smaller sizes that cause trouble from spontaneous heating. The sample for test was crushed to all pass a  $\frac{1}{4}$ -inch screen, and the crushing was done in stages so that 80 to 90 per cent remained on a 35-mesh screen. Admittedly, this sizing was arbitrary, but it was determined by experiment that the consist did not differ widely from the minus  $\frac{1}{4}$ -inch material screened from slack coal placed in storage.

According to Schmidt's<sup>12</sup> evaluation of the quantitative data available on the effect of surface area of a coal upon its rate of oxidation, the rate is proportional to the cube root of the surface area.

The average surface area of stage-crushed 0- to  $\frac{1}{4}$ -inch coal as calculated from the screen analysis<sup>13</sup> and the factors given in Table 3 is approximately 40 square feet per pound. Thus, if the screen analysis and the rate of oxidation (or rate of heating) are known for one size consist, the rate can be

calculated for other size consist using factors derived from the screen analysis applying and the cube root law.

The effect of oxygen availability as concentration or partial pressure on the rate of oxygen consumption has been determined at 212° F. for a number of different coals. The oxygen concentrations were varied from about 1 to 20.5 per cent, and it was found that the effect of oxygen concentration on rate differs very little from coal to coal regardless of the type of coal under test. The work has shown that oxidation rates at various concentrations (1 to 20.5 per cent) can be calculated from an equation of the following type:

Equation 2:

$$\frac{R_1}{R_2} = \left[ \frac{(O_2)_1}{(O_2)_2} \right]^{.66}$$

where  $R_1$  and  $R_2$  are the oxidation rates and  $(O_2)_1$  and  $(O_2)_2$  are the corresponding oxygen concentrations, the average value of the exponent is 0.66 for the 46 coals which were tested. Variations from 0.66 were found, but these seemed to be due to experimental error rather than to changes in coal properties.

Comparative heating and oxidation rates have been published<sup>14</sup> by the Bureau of Mines for 46 coals of different rank along with a detailed discussion of the effect of the various factors involved in application of the methods. The variation of the relative heating tendency with rank is well illustrated by the average results taken from this paper, and also including the results on 12 additional coals tested at a later date. These values are obtained from the adiabatic calorimeter results at 212° F. and are expressed as a ratio to the heating rate of Pittsburgh bed coal taken as 1. The average self-heating tendencies for the various coal ranks are as follows: Low-volatile coal, 0.52; medium-volatile, 0.80; high-volatile A, 1.73; high-volatile B, 8.0; high-volatile C, 10.3; subbituminous A, 14.1; subbituminous B, 27.6; and lignite, 50.8. Only a few coals were available for average in the subbituminous and lignite ranks, but the data are sufficient to indicate the order of variation in the spontaneous heating tendency with rank of the coal.

#### Byproduct and Beehive Coke Consumption Up

CONSUMPTION of byproduct and beehive coke in 1944 increased 2 per cent over the previous maximum of 1943 and amounted to 72,999,670 tons, according to a study just released by the Bureau of Mines, United States Department of Interior. The report (M. M. S. 1341) presents extensive statistical data on the distribution of such coke by principal uses and geographic areas. It does not include coke made in coal-gas retorts, petroleum and tar refineries and reclaimed coke recovered from waste banks.

Byproduct coke ovens supplied 91 per cent of the total tonnage consumed compared with 89 per cent in 1943 and thus reflected the increased byproduct coke-producing capacity completed during 1944. The bulk of the by-

product coke produced is used by producers in adjacent metallurgical works and in 1944 only 39 per cent of the total byproduct coke output moved outside the producing plants.

Domestic coke shipments increased 34 per cent over 1943 and were responsible for the gain in total coke consumption in 1944. The domestic coke trade was the second largest consuming channel and accounted for 8 per cent of all coke and breeze consumed compared with 6 per cent in 1943. Consumption of coke in blast furnaces declined slightly and represented approximately 74 per cent of the

total coke and breeze consumption compared with 75 per cent in 1943.

Shipments to certain classes of manufacturers were less, and total deliveries to the manufacturing group as a whole (foundry, producer gas, water gas, and other industrial) declined from 13 per cent in 1943 to 12 per cent in 1944. The demand for coke breeze in 1944 increased 213,597 tons over 1943 and reached 5,176,191 tons. This tonnage represented approximately 6 per cent of the total consumption of coke and breeze, the same ratio as in 1943.

collaborators, uniform treatment of the subjects is not to be expected. Each author, who was carefully selected because he was directly engaged in or closely associated with the work on the subject of his chapter, was asked not only to discuss its status as disclosed by the literature but also to point out where additional information would be helpful in advancing knowledge of the subject.

While the original intention was to include consideration of all published material through 1939, many chapters include references of papers published in 1942 and 1943. In other chapters, later references were added editorially to those cited in the original manuscript and, where possible, statistical information was brought up to the latest available. Many authors have used hitherto unpublished data.

These two volumes should prove invaluable to the gas industry and are recommended for every gas company library.

The material is completely indexed, including a book index listing all books and monographs referred to in the text. It is attractively printed, illustrated and cloth-bound. Sets of the two volumes of "Chemistry of Coal Utilization" may be secured at \$20 per set from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

## Water Gas Research Program at Battelle

UNDER the sponsorship of the American Gas Association, research engineers at Battelle Memorial Institute, Columbus, Ohio, has set out to determine what goes on in a water-gas generator. For more than sixty years, gas has been made from steam and coal or coke by the water-gas process, and, for just as long, the exact method by which the gas is formed has been a matter for discussion and speculation.

As explained by Ralph Sherman, supervisor of fuels research at Battelle, a greatly increased demand for manufactured gas for residential heating is expected after the war. To meet this demand, the gas industry faces greater expansion in production. Processes and plants of large output and low-capital cost are required, because the full capacity is needed but a few days per year. A more complete knowledge of the mechanism of the water-gas reaction may permit changes in design or operation that will obtain from the highly reliable water-gas set more gas at lower cost.

Availability of cheap oxygen in the post-war period may make it economical to mix oxygen with the steam to produce more gas

without increase in the size of the generator. Gasification under high pressures should make it possible to reduce the size and cost of the gas-making equipment. The effect of such modifications on the mechanism of the combination of carbon and steam will be investigated as part of the research at Battelle.

This investigation is part of the million-dollar research program being conducted by the Manufactured Gas Production Research Committee of the American Gas Association to assure the availability of manufactured gas at low cost for all requirements after the war. P. T. Dashiell, vice-president of The Philadelphia Gas Works Company, is chairman of the committee, and Edwin L. Hall, of the American Gas Association, is coordinating secretary, with responsibility for direct supervision of the program.

Battelle Memorial Institute, in whose fuel laboratories the experimental study is already in progress, is an endowed foundation for education and industrial research. It conducts research in fuels, metallurgy, chemistry, physics, ceramics, and other physical and engineering sciences.

## "Chemistry of Coal Utilization" Is Monumental Work

A COMPREHENSIVE but critical review of the vast literature that has accumulated on the chemistry of coal utilization prepared by a staff of 35 contributors, all noted authorities in their fields, has been published in two volumes entitled "Chemistry of Coal Utilization." Prepared by the Committee on Chemical Utilization of Coal, Division of Chemistry and Chemical Technology of the National Research Council, it is a monumental work of great importance. H. H. Lowry, director of the Coal Research Laboratory of Carnegie Institute of Technology, Pittsburgh, was chairman of the committee and acted as editor of the books which total 1868 pages in length.

Volume 1 comprises 24 chapters covering among other subjects, the origin of coal; its classification; its petrography; its calorific value; its hardness, strength and

grindability; its general physical properties; its chemical constitution; the fusion, flow and clinkering of coal ash; the cleaning of coal; changes that take place in coal on storage; the action of solvents on coal; vacuum distillation of coal; coal carbonization; and coke.

Volume 2 includes 16 chapters dealing with such subjects as recovery of sulphur and nitrogenous compounds from coal gas; light oil from coke oven gas; removal of miscellaneous constituents from coal gas; utilization of coal gas; the chemical nature of coal tar; ammoniacal liquor; combustion; direct generation of electricity from coal and gas; producers and producer gas; water gas; hydrogenation of coal and tar; synthesis of hydrocarbons and of methanol from water gas.

In a work such as this, with so many

## Data on Corrosion Of Cast Iron

EXTENSIVE data on the corrosion rates of cast iron exposed to the action of substances commonly handled by chemical structures feature a pamphlet, entitled "Cast Iron in the Chemical and Process Industries," recently published by the Gray Iron Founders' Society, national association of manufacturers of engineering gray irons. It is the work of F. L. LaQue, head of the corrosion engineering section of the International Nickel Company, Inc.

Results of laboratory and plant tests with more than 300 corrosive media in an alphabetical range from acetic acid to zinc sulfate are shown. The four appended tables also list the many chemicals regularly handled by cast iron pumps and valves and those resisted satisfactorily by high silicon irons.

Factors dictating cast irons for corrosive service, the availability of the material, design for chemical industry equipment and many specific applications are discussed in the text of the 28-page publication. The pamphlet is available at \$1 per copy from the Society's Cleveland or Washington offices.

## War Note

A MEMBER of the American Military Government staff at Munich, surveying the large cases full of assorted documents which have to be honeycombed, made this comment! "These Germans saved everything. Here's a filing case full of gas bills paid in 1904."

# Personal and Otherwise

## G. I. Vincent Retires, Rate Authority



*G. I. Vincent*

is widely known as an authority on rate subjects, having served for many years as a member of the Rate Committee of the American Gas Association. He is the author of numerous technical articles.

A graduate of the University of Pennsylvania with a B.S. degree in electrical engineering in 1898 and an M.E. degree in 1902, Mr. Vincent was first employed in 1898 by The Philadelphia Gas Works Co., as a street clerk. Within six years he had advanced successively to special inspector, assistant superintendent and superintendent. In 1904 he joined the Allentown Gas Co. as assistant superintendent and a year later became engineer for the Des Moines Gas Co., a position he held until 1917. He left that year to become engineer of the Syracuse Lighting Co. and later was advanced to manager and then vice-president. He was appointed to the position from which he retired in 1930.

### Toluol Expert in World War I

Mr. Vincent was a toluol expert and dollar-a-year man in World War I. He also was commissioner of schools of Syracuse and had done research work at Iowa State University.

In addition to the American Gas Association he is a member of the American Institute of Electrical Engineers, American Society of Mechanical Engineers (chairman, Syracuse Section), Technology Club of Syracuse (vice-president), Mid-West Gas Association (past president and honorary member) and American Society for the Advancement of Science. He is also past chairman of the National Affairs and Industrial Development Committee of the Chamber of Commerce.

## Brazel Promoted to Assistant Controller

CRAD BRAZEL has been elected assistant controller of the Philadelphia Company and subsidiary companies, of Pittsburgh, Pa. to fill the vacancy caused by the death of John F. Davis on June 24.

Born in Treleau, Wales, Mr. Brazel has been employed by various Standard Gas and Electric Company properties over a long period of years. From 1913 to 1918, he was accountant-traveling auditor for the Southern Colorado Power Company at Pueblo, Colorado; from 1918 to 1919, auditor for the Ottumwa Light and Power Company at Ottumwa, Iowa; and in 1920 to 1926, accountant and construction auditor for Northern States Power Company at Minneapolis, Minnesota.

In 1926 he was transferred to Pittsburgh, and served as auditor in the Pittsburgh Branch of the Byllesby Engineering and Management Corporation until 1936, when he was appointed special accountant for the Philadelphia Company. In August 1939, he was made general auditor for the Companies, which position he held until his recent election to assistant controller.

Mr. Brazel is a member of the Masonic Fraternity, Pittsburgh Chamber of Commerce, Pennsylvania Electric Association, and American Gas Association.

## Lt. Col. Hornby Returns to Civilian Life



*Lt. Col. Hornby*

L. T. COL. ROBERT A. HORNBY, vice-president and a director of the Pacific Lighting Corp., San Francisco, Calif., has returned to civilian life after more than thirty-nine months service with the Army Air Forces, it was announced July 25 by Major General Ralph P. Cousins, Commanding General of the

AAF Western Flying Training Command. The AAFWFTC operates a network of training fields in the Western states, and has trained nearly one-third of all air crews for the Air Forces.

Colonel Hornby entered active duty in April, 1942, and served at Headquarters, AAFWFTC, Santa Ana, and Headquarters, Army Air Forces, Washington, D. C.

During the rapid expansion of the Training Command in 1942 and 1943, Colonel Hornby served in several staff capacities at WFTC Headquarters, particularly in personnel administration. Early in 1944 he served as advisor to Chief of the Air Staff in Washington, returning to Santa Ana to become chief of the civilian personnel and ground safety sections of the Command. Early in 1945 he represented the HQ, AAF at the Tactical Center in Florida preparing the

new senior officers' course in applied personnel management. Recently he has served as chief of an important engineering and maintenance section of General Cousins' staff.

Before completion of Colonel Hornby's duties at Santa Ana, the General wrote: "As you revert to inactive status, I desire to take this opportunity to commend you for the outstanding service you have rendered the Army Air Forces during your long tour of duty."

## Packer Appointed to Copy Committee



*F. C. Packer*

F. C. PACKER, wholesale sales manager, Payne Furnace & Supply Co., Beverly Hills, Calif., has been appointed a member of the national advertising Copy Committee of the American Gas Association. Mr. Packer was nominated for the office by the Executive

Committee of the Manufacturers' Section of the Pacific Coast Gas Association.

Three other representatives of manufacturers are members of the Copy Committee, namely, R. J. Canniff, advertising and sales promotion manager, Servel Inc., Evansville, Ind.; Jim Donnelly, sales manager, Gas Water Heater Division, A. O. Smith Corporation, Milwaukee, Wisc., and L. C. Ginn, sales promotion manager, American Stove Company, Cleveland, Ohio.

In addition to their representation on the Copy Committee, the manufacturers through the A. G. A. E. M., have two representatives on the Committee on National Advertising. They are Lyle C. Harvey, president, A. G. A. E. M., and Stanley E. Little, chairman, A. G. A. E. M. Advertising Committee. Mr. Harvey is president of Bryant Heater Co., Cleveland, and Mr. Little is vice-president of American Stove Company, Cleveland.

## Kern Resigns to Enter Gas Appliance Firm

J. E. KERN, general supervisor of appliance and dealer sales of the Southern California Gas Company, Los Angeles, resigned August 1 to enter the appliance distribution and retailing business in Southern California. He has been succeeded by J. G. Merkle, formerly general supervisor of market analysis and promotion whose title is general supervisor of appliance sales and promotion.

Mr. Kern will be actively associated with the Ralph L. Stowers organization in Pasadena, a firm which retails gas refrigerators and other gas appliances locally, and which acts as co-distributor for Servel in the Pasadena area, as well as distributor for other appliances.

Mr. Kern was associated with the gas company for 21 years.

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## Heads Safety and Research at Houston Natural

APPOINTMENT of Robert M. Hutchison as director of safety and research for the Houston Natural Gas Corporation effective August 1 has been announced by Frank C. Smith, president. His former position as chief engineer will be filled by T. A. Morgan who was advanced from valuation engineer.

Mr. Hutchison's position is newly created. In addition to keeping up with technical developments, he will have supervision over an enlarged safety program which he has headed since 1934. Crowning his achievements in this field was the winning of a first place award by the company in national competition in 1944 for the safe driving of commercial vehicles. From August, 1942 to April, 1945, Houston Natural cars were driven an aggregate of 1,500,000 miles without an accident.

### New Service Center Planned

A new service center which will be established in Houston at a cost of \$400,000 will further enhance the opportunities for full development of a safety program. It will also provide laboratory facilities for experiments relating to corrosion studies, soil analyses, cathodic protection, and other research.

A graduate of Pennsylvania State College, Mr. Hutchison holds a B.S. degree in metallurgical engineering. After a few years in the steel industry in Pennsylvania, he was associated with San Antonio Public Service Co., which he left in May, 1929 to become construction engineer for Houston Natural.

He has two inventions to his credit: the Hutchison Calculator which is used to measure the flow of liquids in pipe lines, and the H & H Odorizer, used in the odorization of dry natural gas.

The new chief engineer, Mr. Morgan, attended Texas A & M College, then majored in accounting at the Dallas College of Southern Methodist University night school for three years. Subsequently he completed the extension course offered by



Robert M. Hutchison

Kansas University in the study of natural gas, as well as an I. C. S. course in civil engineering. His working experience includes ten years with the Lone Star Gas Company in its engineering and valuation departments.

## Cherry Resigns from Jersey Central Post

L BYRON CHERRY, vice-president of the L. Jersey Central Power & Light Company, who since 1943 has been engaged in solving special accounting, financial and regulatory problems of the company, has announced his resignation, effective September 1.

A lawyer, as well as an authority on corporate and regulatory matters, Mr. Cherry will return to private practice, becoming associated with the New York law firm of Hines, Rearick, Dorr & Hammond.

## Servel Appointments



H. M. Wickman

APPOINTMENT of H. M. Wickman as manager of sales, household refrigerator division, Servel Inc., has been made by George S. Jones, Jr., Servel's vice-president in charge of sales.

Mr. Jones also announced that W. K. Grube has been appointed sales manager for Region C which covers Tennessee, Georgia, Alabama, Florida, Missouri, and Kansas and parts of Kentucky, Indiana, Illinois, Oklahoma, and Mississippi. He was formerly a district sales manager for Servel and has been acting regional manager during the war period.

Mr. Wickman, who joined Servel in 1935 as sales promotion representative in Houston, Texas, served with World War I under General George S. Patton, Jr. who was at that time a Colonel.

Mr. Jones also confirmed the appointment of J. C. Kellner as service manager of Servel, household refrigerator division. Since the death of Mr. P. V. Wiske, Mr. Kellner has been acting service manager of this division.

The other appointment announced by Servel is that of H. J. McFadden as district manager with headquarters in Oklahoma City. Mr. McFadden succeeds Roy Weinman in that territory.

## Danish Gas Men Honor A. G. A. President

J FRENCH ROBINSON, president of the American Gas Association, was elected an honorary member of the Dansk Gasteknisk Forening (Danish Gas Association) at its 1945 annual meeting. The membership is for the term 1945-46.

## New A. G. A. Director

FLOYD C. BROWN, vice-president and general manager of the Natural Gas Pipeline Company of America, Chicago, Ill., has been elected to the executive board of the American Gas Association to fill the vacancy caused by the resignation of D. W. Harris of Shreveport. His term expires in October 1946.

Mr. Brown has served as vice-president and general manager of Natural Gas Pipeline Company and its affiliate, Texoma Natural Gas Company, since May 1930.

## Resigns Lone Star Post to Head Peerless



D. A. Sillers

D. A. SILLERS has resigned from his position with Lone Star Gas Company, as superintendent of gas measurement, to become president of the Peerless Manufacturing Co. of Dallas.

Mr. Sillers is a graduate of Carnegie Institute of Technology, spent four years as sales engineer for the Foxboro Co. and

twenty years with Lone Star. During these years he developed a gravity balance, recording gravimeter, orifice meter slide rule, and gas cleaner in general use in the industry.

He has developed the products of the Peerless Manufacturing Co., which include separators for gas and oil, steam and air; natural gas odorizers, and a valve for shutting down pumping wells. He has been active in the development of present gas measurement practices and will be available as a consulting engineer on gas measurement problems.

## Major Strickler Again Heads War Chest Drive



Major T. J. Strickler

MAJOR T. J. STRICKLER, vice-president and general manager of the Kansas City Gas Co., Kansas City, Mo., and past president of the American Gas Association, is again directing the War Chest campaign in Kansas City. As president of the War Chest, Major Strickler announced in August that the 1945

campaign goal had been set at \$2,300,000, the same as in 1944.

The campaign will be held in October. It will be the final appeal for the 15 foreign-relief groups, the United Service Organizations, the United Seamen's Service and the War Prisoners' Aid and represents the sum required until liquidation of those agencies of the National War Fund.

## A. G. A. Engineer Decorated by Two Governments

THE third employee of the American Gas Association Testing Laboratories to be honored by the armed forces with the Bronze Star Medal for distinguished service is First Lieutenant Frank E. Hodgdon now with the Transportation Section, Continental Advance Section in Germany.

Major General Arthur E. Wilson, commanding the section, made the award. Lt. Hodgdon was also honored by the French government, receiving the Croix de Guerre avec Eloite d'Argent or French Cross and Silver Star, presumably for the same service that brought him the American honor.

The U. S. citation reads: "First Lieutenant Hodgdon effectively and meritoriously executed his duties as night dispatcher. His untiring efforts and efficient handling of this tremendous task; his commendable initiative in checking and rechecking the minor details; his knowledge and foresight in scheduling trucks to meet unusual demands at individual loading points; his devotion to duty without regard to comfort and long hours involved, aided tremendously in the movement of supplies to the Armed Forces."

Lt. Hodgdon served overseas for 31 months in England, North Africa, Italy, France, and now Germany.

The two other Laboratories' employees who have won the Bronze Star Medal are First Lieutenant Carl F. Geltz and Captain Robert T. Hlavin. Lt. Geltz is also stationed in

Germany and details of his citation are unknown. He is an officer of an engineering unit. Captain Hlavin recently visited the Laboratories after 38 months in the Pacific where he served as Aide de Camp to General Robert S. Beightler of Ohio's famed 37th Division. He displayed unusual ability in handling transportation and supply problems throughout the New Georgia and Solomon Islands operations as well as in meeting tactical problems that followed. He was graduated from Officers Candidate School overseas.

Lt. Geltz besides holding the Bronze Star Medal, holds the Presidential Unit Citation as does another Laboratories' engineer, David G. Willich. Now stationed in Giebelstadt, Germany, with an engineering unit, Willich hopes to be home by the end of the year.

Also in the German area is First Lieutenant Morton Z. Fineman who is associated with a mobile petroleum products laboratory of the Quartermaster Corps. Their mission was to test and classify captured enemy petroleum products, and supervise similar products for our mechanized army.

Another recent visitor to the Laboratories was Lt. H. C. Clark who has served in the Navy in both the Atlantic and Pacific. He participated in a number of invasions as well as battles at sea including the sinking of a famous German battleship in Norwegian waters.

## Obituary

**WALTER H. BROWN**, assistant superintendent of distribution for the Providence Gas Co., Providence, R. I., died August 18. He was 63 years of age.

Mr. Brown was employed by the gas company for 44 years. He was a member of the American Gas Association and the New England Gas Association.

A native of Providence, he was a prominent Mason and was active in church and civic organizations. He was a past president of People's Baptist Church, Auburn, and a former member of the board of trustees of the church. He was also a member of St. Andrew Chapter of All Saints Church.

He is survived by his wife, Rita P.; and a son, Walter H., Jr.

**A. T. BARRETT**, superintendent of American Meter Company's Chicago factory, died on July 19.

Born in 1872, Mr. Barrett was identified with the gas industry since 1889 when he started work with the Maryland Meter Works. In 1913 he went west to manage the LaPorte Meter Company, which was taken

over by American Meter Company at that time. Later Mr. Barrett moved to the Chicago area as sales representative of American Meter Company. From 1942 until his death he was superintendent of that company's Chicago factory.

An active member of the Mid-West Gas Association, Mr. Barrett was instrumental in starting the Ames Meter School, which was sponsored by that association. He was also a member of the American Gas Association, the Indiana, Illinois and Missouri associations, as well as active in the Wisconsin Utility Association. He was a member of the Meter and Regulator Subcommittee of the latter at the time of his death.

**ADAM KURTZ**, vice-president and treasurer of the Michigan Consolidated Gas Company and a nationally known figure in the public utilities field, died August 1 after an illness of several weeks. His age was 65.

Mr. Kurtz was born in Franklin, Wis., the son of Henry and Maria Kurtz, pioneer settlers of their locality. He was educated in Sheboygan, Wis., and, in 1900, entered the employ of the Milwaukee Gas Light Co.

Appointed traveling auditor of the American Light and Traction Company in 1918, he became two years later controller of the Detroit City Gas Company, predecessor of the Michigan Consolidated. In 1937 he was

named secretary and treasurer of the latter organization, and in 1938 he was elected vice-president.

Mr. Kurtz was recognized in banking and accounting circles in the country as an authority on utilities auditing and financing. He was a member of the Michigan Gas Association, the American Gas Association, the Detroit Athletic Club and the Harmonic Society of Detroit.

He leaves a widow, Matilda; two daughters, Mrs. Ruth Schaupner and Mrs. Margaret Unckrich; three sisters, Mrs. T. J. Zimbleman of Lodi, Calif., and Sarah and Leah Kurtz of Sheboygan.



Donald A. Henry

**DONALD A. HENRY**, rate and valuation engineer for Stone and Webster Service Corp., New York, N. Y., and active in utility rate-making circles for more than 30 years, died suddenly August 3 in the offices of Central Illinois Electric and Gas Co., Rockford, Ill., where he was working on

the proposed changeover of that property to natural gas. He was 58 years of age.

Nationally known as a rate expert in the utility field, Mr. Henry had appeared as a witness before many of the Federal and state regulatory agencies and courts.

A native of Newton, Kansas, where he was born April 9, 1887, Mr. Henry received his B.S. in electrical engineering from the University of Illinois in 1909 and his professional degree of electrical engineer from the same school in 1919. He also studied law at Lincoln College of Law, Springfield, Ill.

Following graduation in 1909, he was one of four members of his class selected by Westinghouse Electric Manufacturing Co. to take its engineering apprentice course. He then returned to the faculty of the University of Illinois as personal assistant to Dr. E. J. Berg, head of the school of electrical engineering.

Entering the employ of the Sanitary District of Chicago as distribution substation operator, he moved through various positions until he was chief operator in charge of the system, also supervising maintenance. He then joined the Illinois Traction System (now part of the Illinois Power and Light System) where he was meter superintendent and assistant superintendent of substations.

From September 1914 until August 1927, he was with the Illinois Commerce Commission, joining the one-year-old state regulatory body as assistant service engineer, and becoming successively assistant valuation engineer, case analyst, utilities rate expert, assistant electrical engineer. In 1918, he was appointed chief electrical engineer of the commission.

Mr. Henry joined Utilities Power and Light Corp., Chicago, in 1927 as rate and valuation engineer and devoted six months to a study

of depreciation, a 200-page brief of which was presented to the Department of Internal Revenue. In 1928 he became head of the rate department for the company now known as Consolidated Electric and Gas Co. where he had charge of rate and valuation matters for all subsidiaries—gas, electric, water, street railway and heat in 26 states, two Canadian provinces and six foreign countries.

When Stone and Webster took over the management of Consolidated subsidiaries in May 1933, he went into the Stone and Webster organization as rate and valuation engineer, the position he held at the time of his death.

A member of the rate committees of both the American Gas Association and the Edison Electric Institute for many years, he served as 1937-38 chairman of the A. G. A. Rate Committee.

Mr. Henry was a member of Sigma Xi and the American Institute of Electrical Engineers.

He is survived by his widow, Muriel Crothers Henry, associate editor of *Gas Age* and *Industrial Gas*; a daughter and two sons, one of whom is personnel and administrative officer at the air base in Oslo, Norway; his mother and one brother.

**FERNAND R. BAIN**, chairman of the board of directors of the Southern Counties Gas Co., Los Angeles, died August 13 at the age of 84. Mr. Bain was associated with Southern Counties Gas Company throughout its entire existence. Up to the time of his death, he maintained an office at the company's headquarters building in Los Angeles and actively participated in the direction of the organization's operations.

Born at Chatham, New York, May 3, 1861, he was educated in private schools of Dover Plains, New York, and graduated from Bishop's Preparatory School, Poughkeepsie, in 1878.

Going to California on a trip in 1910, he became interested in the possibilities of the gas business and early in 1911 participated in the organization of the Southern Counties Gas Company of California. Mr. Bain guided the company from its meager beginning to the present widespread system which serves a large portion of Southern California.

In March, 1928, Mr. Bain was named chairman of the board of directors of Southern Counties Gas Company of California, a position he retained to date.

**GEORGE LIGHT**, one of the oldest employees of any gas company in the United States, died at his cabin on Lange Lake, in Canada on July 27. He was 86 years old.

At the time of his death, Mr. Light was gas consultant and director of the Dayton Power and Light Company, Dayton, Ohio. Had he lived until September 4, this year he would have rounded out 70 years of employment with this company, possibly a national employment record.

Mr. Light was well known in the gas industry. He began his associations with it in the old artificial gas days when he was 10 years old. His father, Joseph Light, was operating the company in Dayton at the time.

Three sons of Joseph Light were associated with the business, the late George Light, Edward Light and Joseph Light, Jr. The latter two have retired from the organization. A son, R. H. Light, is gas engineer with the company.

For the past 25 years George Light spent a month out of each year at his lodge in the Canadian woods and death overtook him at this spot that he loved so well. His body was brought to Dayton for burial. It was during his associations with The Dayton Power and Light Company and predecessor companies in Dayton that Mr. Light saw the rapid growth of first the artificial gas and later the natural gas business. He was most active in all progress made in the industry and during his more active days he was known throughout the country for his associations with the gas business.

## FORWARD RETIRES

(Continued from page 376)

meant to us in our individual lives and will continue to mean in the future. And also to express our envy at the opportunities that you will now have to follow your likes and do many things in the future without the handicap of routine matters which we must continue to face.

"And, finally, to express our best wishes that your life from now on may be as full and as satisfying as you could possibly desire.

"By example, more than by precept, you have set up many guide posts for greater satisfaction in our business and personal careers.

"You have shown the value of the ability to place oneself in the other fellow's shoes in testing the correctness of decisions being made.

"You have proved the possibility and value of performing duties with dispatch without incurring the penalties of hasty action.

"You have always been loathe to criticize, and quick to praise whenever you felt praise was deserved.

"You have demonstrated the advantage of leading others in the effort to help them help themselves instead of attempting to direct them.

"You have proved that silence makes few, if any, enemies.

"Your ability to adhere to the important point at issue and yield on others has brought progress in many fields.

"Your tolerance and respect for others, even though disagreeing with their opinions, has been the means of advancing unity within the industry and the organization.

"You have asked no one to make a greater contribution to the work of the organization than you yourself have been willing to make.

"The pleasure that you have found and shown in your daily work has been a source of inspiration to others at Headquarters."

## MOBILIZING FOR INDUSTRIAL MARKET

(Continued from page 390)

managers, that a close examination, by top management, of the industrial and commercial sales organization's past and particularly its present structure will reveal the postwar necessity of a definite plan including such items as those shown in the list on page 390.

The responsibility for the complete formulation and promulgation of this suggested program does not necessarily fall solely on the individual utility. It could be formulated and promoted by the Committee on Gas Industry Promotional Development and undertaken cooperatively by the equipment manufacturers and utilities. Special equipment sales require highly trained specialists in metallurgy, physics, chemistry, etc. In the field of special heat treating, utility sales organizations need not attempt to know all the phases; they need only to know the requirements of industry and the merits of the company producing the best equipment and known to be capable of making suitable applications. But standard equipment salesmen have a sales engineering job to do. They should know thoroughly the equipment, etc., its application, the markets, how customer uses can be profitably extended.

Manufacturers could assist in training these men in the techniques which will be required. Joint training programs could be established and both present and new utility salesmen sent to the plants of manufacturers where they could become familiar with processes, equipment, application, market surveys and become fully oriented to the job of industrial fuel selling. Most manufacturers would undoubtedly be glad to cooperate in such a program.

From surveys and analyses, the Promotional Committee of the A. G. A. could establish and recommend sales-power, organization structure, compensation, market survey forms and methods, promotional and advertising plans and practical procedures in establishing balanced sales activities for individual gas companies.

Many gas companies benefited by the once used employee training courses established under the Board of Educational Control, composed of gas com-

pany and appliance manufacturers executives and department heads, with an educator and economist as the director. Also, from the various home study and group and discussion courses sponsored by the A. G. A. prior to the war. It is suggested that the Industrial and Commercial Gas Section of the A. G. A. analyze these educational courses with the intent of establishing a similar specialized educational program for industrial and commercial salesmen.

Right now there is immediate need for such a program. We do not hold a monopoly on the market, nor a priority on the consumer's savings or spendable income. We will not be the benefactors of an automatic market. Gas and gas equipment must be sold. Sales structures and plans should be based upon sound research and the recognition of the economic phases of new business activities. Patterns for domestic load stability have been established by Alexander Beebe's subcommittee under the able direction of Hall Henry. I hope you have read and acted on the recommendation in these reports, especially No. 4, "Engineering and Economic Phases of the Gas Industry." There are perhaps no more important or beneficial studies which you could undertake to serve as a guide to a sound merchandising program in the domestic field at this time than those outlined in this report.

As this war ends, we realize that industry has demonstrated its capacity to produce beyond our capacity to consume; that technological developments have reached beyond our ability to apply, that our major problems are those of merchandising, selling and distribution. Our industry is faced with the most formidable challenge it ever has had to face. We can only meet it by mobilizing now for tomorrow's markets!

## ACCIDENTS DON'T JUST HAPPEN

(Continued from page 392)

ideals of management. It has developed as management's perspective of its function has broadened. In thirty-three years of organized work, the safety movement has saved more than 300,000 lives—lives that would have been lost if the non-motor vehicle accident rates of 1912 had continued to the present.

Accident prevention work has increased enormously during the war period. Industry's realization of the importance of safety to efficiency and to the conservation of manpower has been remarkable. And it has been effective. Despite great increases in production; despite the manning of factories with untrained workers, the lame, the halt, the blind and the aged, America's industrial accident rate has not increased!

The years ahead offer American management an unequalled opportunity to reduce the accident rate. We have gained enormously in experience and knowledge of the technique of safety. We have trained safety personnel in large numbers. When the industrial machines return to normal—when materials and parts are available for replacements—when the labor force is back to average in physical condition and training—

when these things happen, tremendous strides forward can be made.

The trade association executive who does his share in making this progress possible will have many satisfactions as his reward. He will have increased the prestige of his association. He will have increased the operating efficiency of his members' firms. He will have kept money in the pockets of his members' customers that can go for the products or services they sell. He will have raised the respect with which his members are held by their employees and by the public.

And—if he is human—the association executive will look in his mirror of a morning with a bit more pride when he can say to himself, "There are people alive and well today who would have been dead or maimed if it had not been for the safety job we've done."

# Personnel Service

## SERVICES OFFERED

**Superintendent** (40) 18 years' experience primarily high and low pressure distribution of manufactured gas. Some knowledge and experience in carbureted water gas manufacturing and pumping station operation. Desires permanent connection in same field—min. salary \$3600. **1496.**

Recently discharged veteran desires position as **Sales Representative** with range manufacturer. Has had ten years' experience in appliance work. As salesman and service man has thorough knowledge of range performance. Good sales record in C.P. ranges. Reliable. Asks chance to prove self. **1497.**

Thoroughly experienced in the appliance business. Ability to handle any kind of a **selling position** in any territory. Will consider a lucrative proposition on an exclusive basis in any of the following capacities. Salesman, sales promoter, supervising distributor, selling organizations, creating key accounts. Wholesale, retail, utility contacts. **1498.**

**Salesman** previously with a large utility company, wishes to secure position with manufacturer of gas stoves, refrigerators or water heaters. **1499.**

## POSITIONS OPEN

**Test Engineer**—Gas and Electric Range Manufacturer requires the services of an experienced engineer familiar with A. G. A. testing laboratory procedures. Mechanical engineer preferred with knowledge of construction and testing for research laboratory. Permanent position. State age, experience and salary desired. **0418.**

**Salesman**—Travel up-state for manufacturer of automatic controls. Contact refrigeration and heating trades. Future assured right man. Sal-

ary and commission: Expenses. Write full particulars including yearly income expected in first letter. **0419.**

**Manager** of water gas property in city of 16,000. Location, North Carolina. Opportunity for post-war advancement. State qualifications. **0420.** Experienced **industrial and commercial gas man** for office and contact work. New York area. **0421.**

**Utilities Analysts**—Must have experience in public utility rate analysis or negotiations, or mechanical engineering with emphasis on the selection of utilities from the standpoint of relative cost and availability. Positions available in several locations. Some traveling required. Write for further information. **0422.**

**Gas Plant Superintendent** for supervision of operation, maintenance and distribution system of oil gas plant having two generators, each 400,000 cu.ft./day capacity and two generators, each 600,000 cu.ft./day capacity. Experience in gas plant operation desirable but not necessarily oil gas plant. Location—Colon, Republic of Panama. Apply by letter giving fully past experience and salary earned each position also references. **0423.**

**Sales Engineers**—Manufacturer of controls for the gas industry requires immediate and post-war services of several sales engineers who possess basic Engineering training and experience. Practical Engineering experience will be considered in lieu of complete schooling. Some sales experience helpful but not a requirement. **0424.**

**Sales Correspondent**—An opening exists for a sales correspondent capable of handling technical correspondence, advertising and directing the routine work of sales clerks. An opportunity to progress into sales engineering work. Applications must state full experience, schooling, age and salary expected to be considered. **0425.**

**Liquefied Petroleum Gas Sales Engineer**—Major producer and marketer in the liquefied petroleum gas industry requires the services of a sales engineer to be located in the Great Lakes Area. Engineering training desirable with knowledge of liquefied petroleum gas sales or industrial fuel or equipment sales experience. **0426.**

**Sales Minded Gas Plant Manager** Virginia City 45000 population. Healthy location. Family man preferred up to age 45. State education, experience, salary desired, date available. **0427.**

**Distribution Engineer**: Position offers real postwar future with progressive manufactured gas utility. Steadily increasing load has necessitated doubling plant capacity. Distribution System expansion requires a qualified engineer with experience in this field. Give full details of education, experience, salary expected and date available. **0428.**

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